

MULTIPLE FOCI OF COMMITMENT AND CREATIVE WORK BEHAVIOUR IN INTER- ORGANISATIONAL INNOVATION PROJECTS

Yvonne Gerarda Theodora van Rossenberg

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List of abbreviations

Abbreviation

CFI = Comparative fit index

CWB = Creative Work Behaviour

CPE = Creative Process Engagement

HRM = Human resources management

ICWB = Incremental Creative Work Behaviour

IFI = Incremental fit index

IIP / IIPs = Inter-organisational Innovation Projects

OCB = Organizational citizenship behaviour

Org. = Organisation

Prof. = Profession

Proj. = Project

RCWB = Radical Creative Work Behaviour

RMSEA= Root mean square error of estimate

R&D = Research and Development

SMEs =Small and Medium-sized Enterprises

Sig. = statistical significant

TLI = Tucker-Lewis index

TSB = the Technology Strategy Board

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Related publications

Several ideas and pre-conceptual works of this thesis have been submitted and accepted for publication in peer-reviewed sources.

Papers

Swart, J., Kinnie, N., van Rossenberg, Y. G. T. (2014). Why should I share my knowledge? A multiple target of commitment perspective *Human Resource Management Journal* (accepted and in press: doi: 10.1111/1748-8583.12037).

Yalabik, Z., van Rossenberg, Y. G. T., Kinnie, N., & Swart, J. (2014). Engaged and committed? The relationship between employee engagement and commitment in Professional Service Firms *International Journal of Human Resource Management* (under second review)

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Van Rossenberg, Y. G. T., Swart, J., and Kinnie (2014). Managing creativity in the workplace: definition and measurement of the concept of creative work behaviour. *Workshop proceeding research advances in OB and HRM, Paris Dauphin, 6 – 7 May 2014, Paris, France.*

Kinnie, N., Swart, J., van Rossenberg, Y. G. T. , & Yalabik, Z. (2013). Profiles of liminality: Commitment conflict in professional service firms. *European Group of Organisation Studies, 4 – 6 July, Montréal, Canada.*

Van Vuuren, T., Semeijn, J., & Caniels, M., de Stobbeleir, K., van Rossenberg, Y. G. T. (2013). HR and Creativity in organisations; in search of stimulating factors and conditions. *European Association of Work and Organisation Psychology, 22 – 25 May, Münster.*

Van Rossenberg, Y. G. T., Swart, J., and Kinnie (2013). Creativity: for the love of whom? *Workshop proceeding research advances in OB and HRM, Paris Dauphin, 15 – 16 May 2013, Paris, France.*

- Swart, J., Kinnie, N., & van Rossenberg, Y. G. T. (2013). With whom do I share my knowledge? Commitment profiles and knowledge sharing behaviour. *Organisational Learning, Knowledge and Capabilities Conference (OLKC), April 25-27, Washington.*
- Van Rossenberg, Y. G. T., Swart, J., & Kinnie, N. (2012). How do Professional Service Firms facilitate creativity? A typology of commitment to multiple target and its effect on creative behaviour. *The Novak Druce Annual Conference on Professional Service Firms 8 – 10 July 2012, Leuphana, Germany.*
- Swart, J., Kinnie, N., Yalabik, Z., van Rossenberg, Y. G. T., & Gustafson, S. (2012). Engaged and committed? The relationship between employee engagement and commitment in Professional Service Firms. *European Group of Organisation Studies, Aalto University and Hanken School of Economics, Helsinki, Finland, July 5-7, 2012.*
- Van Rossenberg, Y. G. T. (2012). Organizing creativity in a cross boundary organisational setting: How is commitment to multiple target related to employees' creative behaviour? A systematic review. *European Academy of Management, 6-8 June 2012, Rotterdam, the Netherlands.*
- Kinnie, N., Swart, J., & van Rossenberg, Y. G. T. (2012). Why should I share my knowledge? A multiple target of commitment perspective. *European Academy of Management, 6-8 June 2012, Rotterdam, the Netherlands.*
- Van Rossenberg, Y. G. T., Swart, J., & Kinnie, N. (2012). Exploring the value of juxtaposing variable-centred and person-centred approaches: The case of multiple target of commitment attitudes and creative behaviour. *Workshop proceeding research advances in OB and HRM, Paris Dauphin, 22 – 24 May 2012, Paris, France.*
- Van Rossenberg, Y. T. G. (2011). Relations between commitment and creativity: A multiple target approach. *European Group of Organisation Studies, University of Gothenburg, Sweden, 7-9 July 2011.*
- Van Rossenberg, Y. G. T. (2011). Multiple target of commitment and creative behaviour. *Advanced Institute of Management (AIM) workshop: 'Working in creative industries', Durham Business School, United Kingdom, 23 – 24 Februari 2011.*

Abstract

Creative ideas are valued increasingly in all kinds of organisations. Searching to facilitate creative processes, organisations recognise that the source of new ideas and information lies in the interaction between different functional departments, as well as in the cooperation with external actors. For this reason organisations engage in collaborative innovation projects. These inter-organisational or networked employment structures provide a setting in which employees interact with a multitude of entities. In this context, employees can be expected to develop commitment to multiple foci, such as the organisation, the profession and the client. Employee attitudes, especially their level of commitment, are likely to be central to their willingness to engage in activities which are vital to the creative process.

Employing a field theoretic lens, this thesis seeks to examine employees' affective commitment to seven foci: the project, the organisation, the profession, the client, the lead project manager, the career and the job. The emphasis lies on the examination of the interactions between these foci of commitment in their influence on employees' creative work behaviour. The thesis offers the integration of previous research into a new concept central to the management of creativity in the workplace. Creative Work Behaviour (CWB) is conceptualised on the basis of four phases of the creative process (1) problem identification, (2) information search, (3) idea generation, and (4) idea evaluation. In addition, in this thesis two types of creative work behaviour are recognised: incremental and radical, which are contrasted with routine in-role behaviour. Thereby, the concept of creative work behaviour is advanced, both theoretically as well as empirically, by the test of the survey measure of the concept showing reliability and validity across a wide variety of participants in innovation projects.

This thesis relies on individual data from 450 Inter-organisational Innovation Projects (IIPs) funded by the UK government. The data is analysed using both variable centred and person-centred types of analysis. Fitting the data into a series of latent regression, structural equation, and latent mixture models, the analyses provide comprehensive insight into the interactions between the multiple foci of commitment in their effect on creative work behaviour.

Analysis of the data showed employees to distinguish between the seven foci of commitment in the IIP context. The results showed the effects of commitment to differ in strength between the types as well as the phases of CWB. Direct effects were strongest for commitment to the project on routine behaviour, commitment to the job on the generation of incremental creative ideas, and commitment to the profession on the evaluation of radical creative ideas.

Commitment to the leader had a weak effect on employee behaviour, specifically for radical CWB. Commitment to the profession had an overall strong effect, except for information searching and encoding. Commitment to the project was found to be the key mediator in the effect between multiple foci of commitment on both routine and incremental CWB. For incremental CWB the mediation model was a poorer representation of the variance in the data; moreover the models must allow direct effects of commitment to the job on the generation of incremental creative ideas. For radical creative behaviour commitment to the job was found to be the best fitting mediator between commitment, representing the variance in the data equally as well as the full direct effects model. Latent Profile / Mixture Analysis enables additional insight into the combinations of foci of commitment (commitment profiles) and their relations to creative work behaviour, as well as underlying motivation and experienced creative support.

This thesis is the first to propose and empirically examine the relations between commitment and creativity using a multiple foci approach. The concepts of commitment and creativity are embedded in two different fields of research and, therefore, have rarely been studied together. The results demonstrate multiple foci of commitment to be fundamental to employees in the context of inter-organisational innovation projects, interacting strongly in affecting employee behaviour.

The specific context of inter-organisational innovation projects increasingly represents the emergent workplace setting in the current knowledge era. Understanding of the interplay between commitment to multiple targets in inter-organisation innovation projects provides a basis of the management of employee commitments, and, thereby managing employees' creative behaviour. Creative work behaviours are a vital behavioural outcome in innovation projects, increasingly valued in all kinds of organisations.

Chapter 1

Introduction

This chapter provides a background, an introduction to the approach and a short overview of the research conducted in this thesis. First, the reason, relevance and purpose of the research are outlined. Second, the objective, approach and contribution of this study are presented. Finally, an outline of the chapters in this thesis is provided

1.1 Research motivation

In the aftermath of the deep economic recession, Europe is desperately seeking sustainable economic growth and the creation of new jobs. The EU's growth strategy 'Europe 2020' has been set out to help Europe deliver higher levels of employment, productivity and social cohesion. A flagship initiative of Europe 2020 is the creation of 'the Innovation Union', which aims to improve the conditions for Research and Development (R&D) and innovation. Through European Innovation Partnerships business and university partners are provided a space to benefit from interaction between organisations in the innovation process.

Europe's interest in creativity and the measurement of this construct is driven by the Centre for Research on Lifelong Learning (CRELL). In 2009 they identified a tremendous potential for exchanging of ideas and enhancing possibilities for creative accomplishments.

The president of the European Commission, Jose Manuel Barroso, stated:

"Creativity is the core of any innovation. But creativity is a complex construct and requires to be studied properly if we want to develop and implement effective policies."

Similarly, national government are searching for ways to stimulate innovation and initiatives are plentiful. It is estimated the UK government has invested a total sum of £2.5 billion in collaborative innovation and R&D over the past five years¹. Given the significant investment in such projects, surprisingly we know only little about the creative and innovative processes taking place in these projects. Moreover, there is inadequate insight into what makes people engage in creative behaviours, which kick start innovation.

¹ Technology Strategy Board, 'The facts, a pocket guide', second edition, December 2012

Governments as well as organisations have started to recognise that the source of new ideas and information lies in the interaction between different functional departments, as well as in the cooperation between a wide range of external actors and sources (Dyer and Singh, 1998; Hsu, Wang, and Tzeng, 2007; Laursen and Salter, 2006). Where employees from different departments or different organisations come together, this is more likely to lead to the exchange of ideas leading to the development of new ideas, creativity and innovation. For this reason, organisations are found to increasingly interact closely with groups both within and across organisational boundaries (Swart and Kinnie, 2012).

Collaborative innovative projects, where employees from different organisations come together, represent networked employment structures. A consequence of these work structures is that the role of the organisation is surpassed by the employees' interaction with several parties in this networked context. This has implications for how employees interact with the organisation and the other entities within and around the organisation. Only very recently have management studies begun to recognise the implications of these type of cross-boundary employment context for management theory.

One such strand is found in commitment literature, which recognises that multiple parties in the network compete for the employee's commitment (McLean Parks, Kidder and Gallagher, 1998; Meyer, Becker and Vandenberghe, 2004; Reichers, 1985, 1986; Stinglhamber and Vandenberghe, 2003). Commitment is defined as a bond or psychological attachment to an organisation following O'Reilly and Chatman's early definition (1986). Consequently, Becker (2009) has stressed the importance of distinguishing between a target and a type of bond. The recognised types of bonds are affective ("want to" or desire), normative ("ought to" or obligation), and continuance ("have to" or costs) (Klein, Molloy, & Brinsfield, 2012).

Regarding commitment targets, various internal and external targets (expressed here as foci) of commitment have emerged as employees work within and across organisational boundaries, such as teams, supervisors, the job and work in general; with fewer studies evaluating the commitment to top management and customers (Becker, 1992; Bentein et al., 2002; Klein et al., 2009; McLean Parks et al., 1998; Redman and Snape, 2005; Reichers, 1985; Stinglhamber et al., 2002; Stinglhamber, and Vandenberghe, 2003; Swailes, 2004; Vandenberghe, 2009). Working in inter-organisational projects means interacting closely with groups both within and across organisational boundaries (Swart and Kinnie, 2012). In particular relevant to collaborative innovation projects are the targets of commitment crossing the boundaries of the organisation, i.e. external foci of commitment, which include

commitment to the client or client organisation, profession and occupation, career, and, intra-organisational teams (McElroy, Morrow, and Laczniak, 2001).

Following attitude – behaviour linkages (Fishbein, 1975), employee commitment to the organisation has always been a good predictor of employee behaviour (Mowday, Porter, and Steers, 1982; Shore and Wayne, 1993). However, we are only starting to gain insight into how multiple targets of commitment influence employees' behaviour. Specifically, we know little about how multiple targets of commitment influence employees' engagement in creative types of behaviour. This specific type of employee behaviour is important because creativity has been found to be one of the key drivers of innovation, growth, performance, effectiveness and survival (Amabile, 1996; Woodman, Sawyer and Griffin, 1993).

With creativity being described as the fuel for innovation, creative behaviour is essential for the success of innovation projects. However, research into the management of creativity is highly fragmented. Creativity in organisations is often assessed by the creative output: a rating of creativity of a product, a service, or a change in how to deliver the product or service. Only a few studies have focused on the input of the creative process. This is remarkable since the majority of studies do recognise the individual motivation to engage in creative activities to be an essential element in the creative process (Amabile, 1988, 1997; Carmeli and Schaubroeck, 2007).

In this thesis the relations between commitment and creativity follows attitude – behaviour linkages (Fishbein, 1975) and field theory (Lewin, 1943, 1953). Therefore creativity is viewed as a type of work behaviour, which has been a rare approach in creativity studies. One of the few existing concepts allowing this behavioural view towards creativity is creative process engagement, which is defined as “the employee involvement in creativity-relevant methods or processes, including (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation” (Zhang and Bartol, 2010a; 2010b). The engagement of the employee in creative activities is expected to promote employee creativity in such a way that, when employees show higher levels of this type of behaviour, this increases the chance of the development of both novel and useful solutions (Zhang and Bartol, 2010a). Conversely, minimal engagement in the creative process is expected to lead to elementary and straightforward solutions.

Only when employees engage in creative work behaviours do they generate new and useful ideas, which result in new knowledge and new products and services (Kamoche and Cunha, 2001; Kazanjian, Drazin and Glynn, 2000; Shalley and Gilson, 2004). Creative ideas enable organisations to respond to opportunities to innovate, to adapt, to change, to compete

and to grow (Anderson, De Dreu, and Nijstad, 2004; Hulsheger, Anderson, and Salgado, 2009). A substantial volume of studies confirms employee creativity to positively affect organisational innovation, effectiveness and survival (Amabile, 1996; Mumford and Gustafson, 1988; Shalley, Zhou and Oldham, 2004).

Creativity has been generally studied as a broad and unitary construct (Shalley, Zhou and Oldham, 2004; Unsworth, 2001). However, recent studies have found two distinct forms: radical and incremental creativity (Gilson and Madjar, 2011). Radical creativity was found to result from intrinsic motivation, driven by problem identification and abstract theory. Incremental creativity was associated with ideas that are solution-driven and developed on the basis of concrete practices.

This thesis will provide insight into how the multiple foci of commitment affect Creative Work Behaviour (CWB) i.e., routine, incremental and radical CWB, in inter-organisational innovation projects. These complex relations will be assessed by juxtaposing results of two distinct analytical approaches. Thereby this research will provide insight into (1) the multiple ways employees interact with multiple parties in inter-organisational innovation projects, and (2) how commitment towards multiple foci has an effect on employees' creative work behaviour.

1.2 Research objective, framework and contribution

Only few scholars have studied commitment in relation to creativity, and the results of these few studies are inconclusive. The research objective of the current study is to review the existing literature and to unpack the relationship between commitment and creativity building a theoretical framework based on attitude – behaviour relations, field theory and insight from creativity literature. This is followed by multiple empirical tests of the interaction between multiple foci of commitment in its complex relationship with the various types of creative work behaviour. In the analysis both variable-centred and person-centred types of analysis are applied and results are juxtaposed. In this way, the thesis aims to provide a profound and complete understanding of the complex relationships between commitment attitudes and creative work behaviours.

This leads to the research question of the thesis:

What is the effect of multiple foci of commitment on creative work behaviour in inter-organisational innovation projects?

In answering this research question a field theoretic lens will be used as it allows us to understand the impact of multiple parties (in multiple fields) on an individual's behaviour. Field theory allows multiple fields to exist and interaction with multiple parties (in multiple fields) (Lewin, 1943, 1953). When an employee feels proximal to multiple fields, and develops commitment to multiple foci, these constituencies together influence the employee's motivation to go the extra (creative) mile in their work. The research question will be deconstructed into a series of hypotheses in chapter two.

This study aims to contribute to both commitment and creativity literatures. Firstly, management studies have neglected to recognise employees working in networked employment settings, which has resulted in a limited understanding of employee behaviour in these settings. By examining inter-organisational projects we are able to develop current theory on how multiple foci of commitment will impact creative behaviour.

Secondly, commitment literature has distinguished between multiple foci of commitment in the work context. However, this study is the first to assess multiple foci of commitment in inter-organisational projects. In addition, though the effect of multiple foci of commitment on employee behaviour has been assessed in previous research, creative types of employee behaviour have been neglected in this respect. This study will compare models predicting routine behaviour with predicting creative types of behaviour, thereby contributing to the commitment literature.

Thirdly, our current understanding of creativity is hampered by the fact that studies predominantly focus on creative outcomes, insufficiently addressing the importance of employees' creative work behaviour. In addition to that, the creativity literature is fragmented and lacks a unifying theoretical framework. Concentrating on the front-end of the creative process, we study the engagement of the employees in creative work behaviours. Only two studies (Zhang and Bartol, 2010a; 2010b) have empirically assessed this concept. Extending, enhancing and testing this concept into Creative Work Behaviour and relating this concept to attitudinal antecedents will contribute to our insight into this valuable type of behaviour. The concept of creative work behaviour is advanced by the development of a survey measure of incremental and radical types of creative work behaviour. Therewith, this study is the first to empirically assess creative work behaviour, and to approach creativity as a particular type of behaviour in relation to multiple foci of commitment.

In an analysis of current research practices in the field of education and psychology, Marsh and Hau (2007) noted an increasing level of disconnection between theoretical developments and new methodological developments leading them to underline the need for

substantive-methodological synergies to reconnect these two areas. Substantive-methodological synergies occur when studies examine substantively and practically interesting and important issues in new and creative ways through the use and improvement of state-of-the art methodological and statistical tools. Complex questions require complex methodologies and often lead to the development and refinement of cutting-edge methodologies, leading in turn to new and valuable insight. This thesis is anchored in this perspective.

A fourth contribution of this thesis lies in the juxtaposition of the person-centred and variable-centred approaches, which is the most appropriate research methodology in answer to the research question (Klein, Becker and Meyer, 2009; Meyer, Stanley and Vandenberg, 2013). In order to cross-sectionally analyse the data, a series of latent models will be used. For the variable-centred approach, direct and mediation effects between the variables will be tested using Structural Equation Models. For the person-centred analyses, latent subtypes of employees will be identified using Latent Profile Analysis and Factor Mixture Analysis, presenting qualitatively and quantitatively distinct characteristics.

Juxtaposing results from multiple types of analysis (variable- and person-centred) will contribute to the current limited insight into the complex interaction between multiple foci of commitment and creative work behaviour. In encouraging the exploration of the person-centred type of analysis, emerging mixture modelling methodologies (latent profile analysis, factor mixture analyses) are turning into highly promising advanced statistical methods for clustering cross-sectional data (Klein, Becker and Meyer, 2009). In addition to Morin et al.'s (2011a) study of commitment profiles, research anchored in the person-centred approach using mixture modelling techniques has yielded interesting insights beyond the results from more classical variable-centred analyses (Marsh et al., 2009; Morin et al., 2011b, 2012). The identification of profiles of employees based on emerging mixture modelling methods has also been recently recognised as an important improvement in the field of Human Resource management and Organisation Psychology.

In order to empirically assess the relationships, data were obtained from 450 participants in inter-organisational innovation projects. A fifth contribution is the insight from this particular research arena which contributes to new insights into work in inter-organisational collaborations, which is suggested to be representative of the work settings of the 21st century (Swart and Kinnie, 2012).

The sixth contribution of this project comes to the fore at multiple levels: ranging from contribution to the scientific management field and research excellence of the European

Research Area, to direct practical relevance with regard to the challenges Europe currently faces. The practical relevance of this thesis to creative processes lies in the knowledge about the relations between commitment and creativity, which will provide insight into the management of innovation projects and the support which may be provided in optimizing creative processes. Very few studies have related commitment to creative behaviour; additionally these studies have neglected the interaction between employees and their cross-boundary network setting.

Combining insights from 21st century work settings and creative processes, with the very latest developments in data analysis techniques, this thesis has advanced our current understanding of the management of employee creativity. This thesis is timely and relevant since both national (UK) and European (EU) level institutions have demonstrated to focus on both the capitalization of creative potential and the enhancement of employability. We recognise that work settings are changing, and managers are in need of insight into how these changes influence employee behaviour. More specifically, this thesis provides practical insight into the management of creativity in innovation projects, such as the pilot European Collaborative Innovation projects which are part of the Innovation Union.

1.3 Structure of the Thesis

This thesis has been organised into seven chapters. After the introduction chapter, in the second chapter the research gap is identified. The chapter provides an outline of field theory, and a more extended review of the literature on multiple foci of commitment and creative work behaviour. On the basis of field theory and insights from creativity research hypotheses are developed. From previous research on multiple foci of commitment three ways of assessing the effects of multiple foci of commitment on creative work behaviour relations are selected. These include (1) the direct effects of multiple foci of commitment on creative behaviour, (2) mediation effects between multiple foci of commitment in their effect on creative behaviour, and (3) the effect of commitment profiles on creative behaviour.

The third chapter consists of two parts. In the first part the research philosophy is outlined, including the epistemology, the methodology and design. In the second part the research arena is presented, the sample procedure is described and demographics of the data are presented. This chapter concludes with an overview of the ethical considerations. The methodology outlined in chapter three leads into the fourth chapter in which the methods and tools for measuring the constructs are developed. The measures for commitment and creativity are developed, explored on validity and tested on reliability. This chapter concludes

with multiple tests for common method bias and an overview of the effects of control variables.

The results and findings of this thesis are presented in two chapters following two general approaches towards analysis; the variable-centred and the person-centred approach. In chapter five the results of the variable-centre analysis are presented. In the first section hypotheses one, two and three are testing the direct effects between the multiple foci of commitment and creative work behaviour. The direct effects of the seven foci of commitment are compared for their effect on routine behaviour, incremental and radical creative work behaviour. In the second section of chapter four, hypotheses four, five and six are tested including the mediation effects of the multiple foci of commitment in predicting the three types of work behaviour. In chapter six the relations between commitment and creativity are tested following a person-centred approach. The data is explored on representative commitment profiles using Latent Profile Analysis, providing more insight into the interaction and coexistence of commitments. The nine profiles found are related to demographics, routine behaviour, incremental creative work behaviour and radical creative work behaviour using Latent Mixture Modelling techniques.

In the final chapter six the results of the thesis are discussed and the contributions of the thesis are outlined. In this chapter provides an overview of the contributions made to field theory, to the measurement of commitment and creativity, and to the insight into attitude and behaviour in inter-organisational innovation projects. The contributions are followed by limitations and a conclusion of the study. The thesis concludes with suggestions for future research.

Chapter 2

Literature review

This chapter provides a review of the literature, an advancement of the research concepts and development of theory, from which the hypotheses will be derived. The first part of this chapter explicates the research gap, includes a short outline of the research context of inter-organisational innovation projects, and provides the background of field theory. The second part of this chapter includes the literature review of the two core concepts of this thesis: commitment and creativity. On the basis of this literature, multiple foci of commitment and creative work behaviour are conceptualised. Lastly, on the basis of field theory a conceptual framework of the relations between these two central concepts is delineated. Hypotheses are developed on the basis of field theory and insight from creativity research.

2.1 Research gap

Traditionally, creative behaviour is expected to be concentrated in specialised Research and Development (R&D) teams, which are separate from the rest of the organisation. Organisations have started to recognise that the source of new ideas and information is the interaction between different functional departments, as well as the result of cooperation between organisations (Dyer and Singh, 1998; Hsu, Wang and Tzeng, 2007). Therefore, innovation increasingly takes place in projects beyond the boundaries of the organisation, in inter-organisational project teams, in open innovation teams and innovation clusters (Calamel, Defélix, Picq and Retour, 2012).

Inter-organisational collaborations enable employees to share knowledge and learn beyond the boundaries of the organisation (Powell, Koput and Smith-Doerr, 1996). Knowledge management studies suggest that inter-organisational collaborations enhance corporate innovative capability by facilitating the flow of knowledge across companies (Ding and Peters, 2000). Review of the literature indicates the outcomes of inter-organisational relationships to include the increase in stability, similarity, knowledge and innovation (Powell, et al., 1996). An example of Inter-organisational Innovation Projects (IPPs) are the European Innovation Partnerships funded by the European Commission.

This thesis will assess attitudes and behaviour in the particular context of IPPs. In this specific setting, where employees are found to interact closely with groups both within and

across organisational boundaries (Swart and Kinnie, 2012) the role of the organisation has become less important. This can be seen as representative of 21st century work settings, in which the employee interacts continuously with parties such as professionals from other organisations, client organisations, and intra-organisational teams.

2.1.1 Employee attitudes and discretionary behaviours

Scholarly interest in attitude-behaviour linkages can be traced back to the Hawthorne studies conducted in the early 1930s (Dickson and Roethlisberger, 1939). Ever since, influencing and predicting employee behaviour at work is an on-going challenge in the management of employees. The question of which attitudes drive workplace behaviour has received interest from a wide variety of disciplines, such as industrial-organisational psychology, work psychology, business and management. Attitudes and behaviour linkages in the workplace include (1) attitudes such as job satisfaction, identification, affect, job involvement, commitment, Organisation-Based Self Esteem (OBSE) and (2) behaviour such as, intention to quit, absenteeism, in-role and extra-role behaviour, Organisation Citizenship Behaviour (OCB), pro-active behaviour, and job performance.

Fishbein and Ajzen (1975) laid the foundations about attitudes-behaviour relations. They propose that employees' behavioural intentions can be predicted by the combination of attitudes toward the behaviour and a subjective norm connected with the behaviour. The underlying assumption is that attitudes relate to the intention to behave in accordance with the attitude, and subsequently, the behavioural intentions are expected to have a direct relation with the actual corresponding behaviour (Fishbein and Ajzen, 1975). What follows is that behaviours are assumed to follow attitudes, rather than the other way around. This assumption on the causal order of this effect may be contested

Researchers have questioned the attitude-behaviour relation after finding weak and non-significant effects (Ajzen and Fishbein, 1977). Consistently, not all employee attitudes are found to (directly) affect employee behaviour (Bentein, Stinglhamber, and Vandenberghe, 2002). On the other hand commitment, which is often defined and conceptualised as an attitude (e.g., Solinger et al., 2008), is found to affect employee behaviour, rooted in the concept of commitment being a 'stabilizing or obliging force' 'that gives direction to behaviour' (Meyer and Herscovitch, 2001). Commitment is shown to be different from more general motivational states such as motivation and engagement, as it has been related to a persistence in a course of action, even in the face of conflicting motives or attitudes (Meyer and Herscovitch, 2001).

Employee commitment to the organisation is repeatedly found to be a predictor of employee behaviour related to the organisation (Hunt and Morgan, 1994). Grounded in social exchange theory, previous research has found commitment to have strong negative effects on withdrawal behaviours (Mathieu and Zajac, 1990), such as absenteeism and turnover (Mowday et al., 1982). Also, strong connections are found between commitment and lower turnover rates and lower turnover intentions (Mowday et al., 1982). The least strong, but still significant, effects were found between commitment and Organisation Citizenship Behaviour (OCB) (Lavelle, Rupp and Brockner, 2007) prosocial behaviour (O'Reilly and Chatman, 1986), job performance (Somers & Birnbaum, 1998), and innovation-related behaviours (Ng, Feldman, and Lam, 2010).

Commitment studies distinguish between (1) the *types* or components of commitment and (2) the *foci* or targets of commitment. The types of commitment are described in the three-component conceptualization by Meyer and Allen (1991, 1997; 1990) which refers to the affective (emotional), normative (obligation and moral) and continuance (cost-based) types of commitment. In a meta review comparing effects of affective, normative and continuance commitment, Meyer et al. (2002) conclude affective commitment has the strongest and most favourable effects on organisation-relevant employee behaviour (attendance, performance, and OCB). This is in line with the multicomponent structure of attitudes, to consist of affective, cognitive and behavioural components (Bagozzi, 1978). In this study we focus on affective commitment since it is the most widely studied, the most generalizable across targets, and the most predictive of employee behaviour (e.g., Morin et al., 2011; Solinger, van Olffen and Roe 2008; Somers, 2010).

The targets or foci of commitment are described as the particular entities, such as individuals and groups, to whom an employee feels attached (Reichers, 1985, 1986). Similarly, Morrow's (1983) theoretical work indicates that employees may become committed to several work-related domains. Recent studies have identified and examined various internal and external foci of commitment which emerge as employees work within and across organisational boundaries (Baruch and Winkelmann–Gleed, 2002; Becker, 1992; McLean Parks, Kidder, and Gallagher, 1998; Redman and Snape, 2005; Stinglhamber, Bentein and Vandenberghe, 2002; Vandenberghe and Bentein, 2009). Research into internal foci of commitment usually involves examining commitment to teams, supervisors, the job and work in general, with fewer studies evaluating the commitment to top management and customers (Klein, et al., 2009; Swailes, 2004). The external foci of commitment include

commitment to client organisations, profession or occupation, career, intra-organisational teams and unions (Vandenberghe and Bentein, 2009).

Commitment has been linked with the intention to engage in a variety of behaviours (Becker, Randall and Riegel, 1995; Mowday, et al., 1982), with some employee behaviours to be more desirable and valuable in the workplace than others. By active participation in creative behaviour employees are more likely to generate new and useful ideas, which result in new knowledge and new products and services (Kamoche and Cunha, 2001; Kazanjian, Drazin and Glynn, 2000; Shalley and Gilson, 2004). Creative ideas enable organisations to respond to opportunities to innovate, to adapt, to change, to compete and to grow (Anderson, De Dreu and Nijstad, 2004; Hulsheger, Anderson and Salgado, 2009). A substantial volume of studies confirms employee creativity to positively affect organisational innovation, effectiveness and survival (Amabile, 1996; Mumford and Gustafson, 1988; Shalley, Zhou and Oldham, 2004).

The individual employee plays an essential role in the creative process, which facilitates organisational innovation (Amabile, 1988; Woodman, Sawyer and Griffin, 1993). It is not surprising that a large number of empirical studies have focused on the factors that enhance or inhibit creativity (Amabile, Schatzel, Moneta and Kramer, 2004; Shalley, Zhou and Oldham, 2004). However, research into the management of creativity is highly fragmented and focuses on the outcomes of creative and innovative processes, rather than the motivation of individual employees to become and remain creatively engaged at work (Amabile, 1998; Carmeli, Cohen-Meitar and Elizur, 2007; Janssen, 2005; Scott, 1995).

Several concepts are found to be stimulating or are related to creativity, such as intellectual and cognitive abilities (Ford, 1996; Guilford, 1950), personality (Barron, 1955; Feist, 1999), leadership (Tierney, Farmer and Graen, 1999), and affective states and traits (Amabile, 1996; Amabile, Barsade, Mueller and Staw, 2005; Madjar, Oldham and Pratt, 2002). Intrinsic motivation is found to be an attitude which affects creativity (Amabile, 1996), however it is unclear which field of interaction is affecting employees in developing intrinsic motivation.

This thesis is the first to address and empirically examine the relations between commitment attitudes and creative behaviour in the context of inter-organisational innovation projects. Studies on the multiple foci of commitment have been concentrating on a multitude of foci towards which employees develop attitudes of affective commitment. These multiple foci of commitment have been related to employee behaviour, however, creative work

behaviours have not been taken into account. Similarly, creativity studies have neglected to include employee commitment attitudes as drivers of creative behaviours.

2.1.2 A field theoretic lens

In order to build a conceptual framework and hypothesize the relations between commitment and creativity to address the research gap, field theory is found to be the appropriate theoretical lens to study attitudes and behaviours in IIP context. Field theory acknowledges behaviour to be influenced by a multitude of effects from the field in which the individual behaviour takes place. Central to field theory is the cognitive distance between the individual and its field. Particular fields can be experienced as more proximal whilst other may remain distal. Proximal fields are fields which the individual experiences as closest and most attached.

Field theory, which originates in physics, is a psychological theoretical framework developed by Kurt Lewin (1943, 1952). Field theory recognises the individual's surroundings ('situational units') to be a totality of coexisting and interdependent factors, which together have causal effects on human behaviour. The principle of the theory is that any expressed behavior in a psychological field is the result of a multitude of factors within the psychological field at that time (Lewin, 1943). Employees develop commitment to multiple foci on the basis of how proximal various targets feel to them (Mathieu and Hamel, 1989). When these are positive, employees experience positive emotions which may cause these parties to become 'objects of affective attachment' (Mueller and Lawler, 1999: 326).

In the study of multiple foci of commitment field theory is used to explain how close or distant employee feels to the various parties in the work environment. Fields becoming more proximal evoking affectionate attitudes towards the field by becoming more intimate. Fields becoming more distal evoke less affectionate attitudes and become less relevant. The closer the employee feels to these parties, the more prominent its influence on the employee's behaviour. The difference lies in the distal parties, with whom the employee is unlikely to experience an exchange relationship.

In the organisational context, commitment attitudes and their effect on behaviour are often grounded in social exchange theory (e.g., Blau, 1989, Mowday et al., 1982, Lavelle, Rupp and Brockner, 2007). Social exchange theory posits that employees would feel a moral obligation to reciprocate when support or benefits are received from any party in the work environment. On the other hand, field theory posits employees' behaviour will be affected only, and most strongly, by the fields towards which the employee feels most proximal. Employees are not expected to reciprocate to fields that are experienced as distal. This is

particularly applicable in IIPs, which represent a context including a large number of foci of commitment.

Aligned with field theory, attitudes are likely to be strongly related to behaviour if there is a correspondence between the target and the action elements of the attitudinal and behavioural entities (Ajzen and Fishbein, 1977). Similarly, recently Lavelle et al. (2009; 2007) suggest that attitudes influence behaviour more adequately when they refer to similar contexts, actions, timelines, and targets. Aligning the target attitude (commitment) with the action element (creative behaviour) in assessing the commitment-creativity relation, commitment towards the project is 'in correspondence with' behaviour working on the project.

In assessing the relation between commitment and creativity it is assumed commitment attitudes to affect creative behaviour, and not the other way around. Following previous research on attitudes in the work context to relate to work behaviour, affective commitment attitudes towards particular groups in IIPs are developed and affect (creative) behaviours related to those groups. Alternatively, it is recognised reverse causal effects may occur in this particular context, in such that having the chance of expressing creativity, and acting in this way, may influence affective commitment towards this particular environment. However, the underlying assumption is that when an employee feels he or she can express creativity in a particular environment, this will first affect levels of affective commitment towards this environment and these attitudes, then, will affect actual expression of creative behaviour. Accordingly, the theoretical framework will be developed further into this direction, expecting effects of multiple foci of commitment on creative work behaviour.

This section has introduced the theoretical framework of field theory in how commitment to multiple foci is expected to influence behaviour in IIPs. In the next section, the literature review of commitment and creativity will be presented, and the concepts will be developed in two separate sections. In the final part of this chapter the conceptual model and hypotheses of the relationships between commitment and creativity will be developed.

2.2 Extended review and conceptualization of the two main concepts

The second section of chapter two consists of two parts, (1) a review of the literature on the multiple foci of commitment, and (2) a review of the literature on creativity and the development of the concept of Creative Work Behaviour. The review of the multiple foci of commitment literature starts with an overview of the early approaches towards the concept. Second, an exploration of the potential foci of commitment in inter-organisational innovation projects is provided. This is followed by a third section on the selection and more detailed description of the seven foci relevant to the IIP context. This is the first step in the thesis' contribution to the development and extension of the multiple foci of commitment construct in the IIP context.

In the review of the creativity literature first an historical overview will provide insight in the development of creativity as an academic concept. The second part of the review focusses on creativity as a specific type of work behaviour. This includes a review and integration of the behavioural approaches towards creativity, and development of the concept of creative work behaviour.

2.2.1 Multiple foci of commitment

The current section will review the literature on commitment, focussing on how employees may develop commitment to various parties in the work environment. This is particularly relevant to the IIP context, in which employees interact with multiple entities beyond the organisational boundaries. First this section provides a basis on the concept of commitment to multiple foci of commitment by introducing some early approaches, assumptions and definitions. This is followed by the exploration of the various entities which can be identified to be a potential target for employees to develop commitment towards. The section concludes with the selection and more detailed description of the foci of commitment relevant to the IIP context.

2.2.1.1 Early approaches, underlying assumptions and definition

Besides the early ideas of Gouldner (1958), most of the studies on multiple foci of commitment seems to be based on two basic works, which are Morrow (1983) and Reichers (1985, 1986). These two major contributions to the literature also represent two approaches to the study of multiple foci of commitment. Both studies are referred to as seminal contributions, and have been the starting point for research in the field.

The first basic theoretical work by Morrow (1983) indicates that employees may become committed to several work-related domains. A facet design is applied to review the literature, to examine the work commitment concepts used in organisational research literature from 1969 to 1980. The study finds the following five forms of work commitment (1) Protestant work ethic endorsement, (2) career salience, (3) job involvement, (4) work as a central life interest, (5) organisational commitment, and (5) union commitment. Job focus commitment (job involvement and work as a central life interest) are recognised and evaluated separately because of they are very different and independent historical evolutions.

Morrow (1983) makes a start with evaluating to which degree the forms of work commitment share unique or redundant components. Job commitment and career salience show some conceptual overlap, in such that career salience can be elevated through professionalization and occupation socialization. This seems to be in line with later studies, which capture this commitment in multiple separate concepts; career commitment, commitment to the occupation and/or profession, and commitment to the job or job involvement.

By focussing on exploring all possible forms of work commitment, or the constellation of various commitment constructs, critique on the work of Morrow is that it makes an unclear distinction between commitments to agents, to commitment parties and to commitment targets (McElroy et al, 2001). This causes some to perceive her work to be ‘over inclusive’ and, therefore, at some points conceptually ambiguous (Shadish, Cook, & Campbell, 2002). Without an explicit description of what constitutes a foci of commitment, it remains unclear what is focussed on, and what could become an entity of commitment.

A second fundamental contribution to the literature on multiple foci of commitment was made by Reichers (1985, 1986). These studies have contributed to Morrow’s (1983) by providing, next to a review, also a theoretical conceptualization of the multiple foci of commitment construct and the relations between the employee and the multiple groups in its work environment. Because of Reichers’ addition of a set of theories to the traditional organisation-commitment literature, this article is viewed as a major early contribution to this stream of literature (Meyer and Allen, 1997).

Grounded in group theory, role theory, and macro conceptions of organisations as political entities, Reichers (1985) recognises the organisation to be coalitional entities that compete for the individual’s energies, identifications and commitments. Following a constituency approach, Reichers identified the individual’s commitment to specific constituencies within the organisation (McElroy et al., 2001). The foci of commitment are

described as the particular entities, such as individual and groups, to whom an employee is attached (Reichers, 1985).

In Reichers' (1985) theoretical framework, the organisation is viewed as a political ground for the lobby of subgroups for the organisation's attention. The macro approaches are based in political economy and the resource control theory of organisational effectiveness (Whetten, 1978). Following this, organisations represent an environment of multiple interest groups, which place conflicting pressures on the organisation (Wamsley and Zald, 1973).

Reichers (1986) makes an important contribution in the micro approaches, in recognition of environments in which conflicting interests and goals exist, within and beyond the boundaries of the organisation. The contribution of this work is that organisational commitment is only accurately understood when viewed in the context of the various groups of which an organisation exists. The organisation is for many employees an abstraction, represented by groups of people composing an organisation (Reichers, 1985). These organisationally-relevant groups may be (top) managers, co-workers, customers and unions (Reichers, 1985) however, this may be dependent on the specific organisation.

Following Reichers (1986) approach this thesis follows that individuals are aware of, and are able to, identity the multiple constituencies that denote organisationally relevant groups. Employees' capacity to form commitments to multiple foci seems unlimited (Klein, et al., 2013a), as employees are found to have high levels of commitment to a large set of workplace targets (e.g., Becker et al., 1993; 1995; Morin et al., 2011). Therefore we follow the "target-free" conceptualization of commitment, which permits the assessment of interplay between multiple, simultaneously held commitments, and assumes commitment to be consistently applicable across workplace targets (Klein et al., 2013b). Following this, commitment is defined as a volitional psychological attitude that links an individual to a focus or target, reflecting dedication to and responsibility for that particular focus (Klein et al., 2012, Solinger et al., 2008, Allen & Meyer, 1990).

Following previous literature in this thesis it is recognised that a.) multiple groups within and beyond the boundary of the organisation exist which may compete for the commitment of the employee, b.) employees are aware of multiple constituencies in the work environment, c.) multiple foci of commitment place pressures on employees which interact and may be conflicting, and d.) employees develop commitments with multiple constituencies within and beyond the boundaries of the organisation which are distinct attitudes rather than together representing a general global commitment construct (e.g.,

Becker, 1992; Stinglhamber, Bentein and Vandenberghe, 2002; Redman and Snape, 2005, Vandenberghe and Bentein, 2009).

2.2.1.2 Exploration of possible foci of commitment

Traditionally, employees developed a relationship with one organisational context, and this organisation was the single entity motivating employees' behaviour. However, there is now a substantial body of research which considers the various foci to which employees might be committed (Becker, 2009; Klein, Becker, & Meyer, 2009; Vandenberghe, 2009), and examines a wide variety of internal and external foci of commitment that emerge as employees work within and across organisational boundaries (Baruch and Winkelmann–Gleed, 2002; Becker, 1992; McLean Parks, Kidder, and Gallagher, 1998; Redman and Snape, 2005; Stinglhamber, Bentein and Vandenberghe, 2002; Vandenberghe and Bentein, 2009).

Reichers (1986) viewed the concept of the multiple foci of commitment as targets of commitment within the organisation. However, an increasing group of studies recognises that some constituencies an employee may identify and commit to, may exist beyond the border of the organisation (Becker, 2009) such as supplier, customer, client or partner organisations (McElroy et al., 2001). Furthermore, Klein, Becker and Meyer (2009: 420) indicate that employees may have a multitude of work related commitments, such as 'other organisations (e.g., union, professional associations, client organisations), individuals within or outside the organisation (e.g., co-workers, supervisors, suppliers, customers), groups (e.g., work group, team), and various ideas and initiatives (e.g., values, goals, decisions, policies, change programs)'.

It is recognised that the focus on various intra organisational commitments may not represent the general changes in the management of people (Boltanski and Chiapello, 2005) and employment structures (Cappelli, 2008). McLean Parks et al. (1998) have indicated that the contacts internal and external to the organisation may lead to multiple foci of commitment within and beyond the organisational boundaries. This is supported by a study particularly focussing on these external organisational commitments, which indicates that opportunities for upward mobility and dependence of the individual on an external organisation may increase commitment to external organisational entities (McElroy et al, 2001).

In making decisions on which foci of commitment to include in a study, possibilities of a variety of foci of commitment should be explored. Two different approaches are evident in the literature, and are outlined by Morrow (1983): (1) the focus on a single major focus of commitment mostly compared to commitment to the organisation, and (2) the exploration of

a combination of multiple foci of commitment. This thesis focusses on the specific context on IIPs, which is a context likely to consist of a unique combination and interplay between multiple foci of commitment, therefore the second approach is deemed to be most suitable.

Following this approach, a systematic review of the literature conducted for this thesis found a total of one-hundred fifty-one studies on the multiple foci of commitment. Out of these, one-hundred twenty studies include empirical assessment of a minimum of one foci of commitment, with the majority focussing on commitment to the organisation. Most empirical work concentrated around comparing commitment with the organisation with the profession, and commitment to the organisation with the commitment to the union.

Targets of commitment that are studied in order of most frequently empirically assessed are: the organisation, the leader, the union, the profession, the team or work group, the occupation, the client or customers, co-workers, top management, work (content and involvement), (protestant) work ethic, the career, the department, the task, the project, the broader work field, funding agencies, the domestic parent and a foreign partner.

2.2.1.3 Selection and description of relevant foci of commitment

From the foci of commitment previously studied not all will be applicable to the setting of IIPs. First, individuals working in IIPs will be participating in the inter-organisational innovation project, therefore the project will be the first foci or target towards which employees may develop of commitment. The leader of the project will be the second foci of commitment. Third, individuals will be employed by organisations while participating in the project. The union, a frequent research focus of commitment, is unlikely to be of any affect in IIPs since this employment setting is unlikely to be affected by unions. Similarly, the projects are unlikely to consist of sub-teams, however, the project will have similarities with commitment to teams in specific to the literature on commitment to temporary teams.

Fourth, since these are inter-organisational projects including strong interaction across the boundaries of the organisation, external commitments are likely to occur, in particular commitment to the occupation, the profession, the career and the job. The commitment to co-workers is captured in commitment to the project, likewise commitment to top-management in IIPs seems less relevant in this context. Fifth, a final external foci of commitment which may be involved to some extend in the project is the client or customer of the product or service developed in the IIP. Expectations of the end-result by clients and the level of commitment towards the client(s) may influence the behaviour of employees in the IIPs. The

literature on the total of seven foci of commitment will be reviewed, the concepts will be defined and discussed in the following section.

Commitment to the organisation

In studies on employee commitment, the organisation is the most often studied target or focus of commitment (Meyer and Allen, 1997; Morin, Madore, Morizot, Boudrias, and Tremblay, 2009; Morrow, 1993). Reflected in a common definition of commitment is “the psychological bond that ties the employee to the organisation” (Becker, 1992; Meyer and Allen, 1997). The study of commitment as an attitude, and not as a behaviour, has typically involved the measurement of commitment together with other variables to be antecedents or behavioural consequences of a commitment attitude (Meyer and Allen, 1997).

Many conceptualizations of organisation commitment have been developed (Morrow, 1983; Mowday, Steers and Porter, 1979), the instrument developed by Allen and Meyer (1990; 1991) has been most frequently used in recent research (Ellemers, de Gilder and van den Heuvel, 1998). The three component conceptualization by Meyer and Allen (1990; Meyer and Allen, 1991) refers to the affective, obligation and moral, and cost based elements of commitment. Affective commitment refers to the emotional attachment to, identification with and involvement in the organisation (Meyer and Allen, 1997). Continuance commitment is based on the costs or perceived sacrifice associated with leaving the organisation, as well as the level of alternative employment opportunities (Ellemers, et al., 1998; Stinglhamber, Bentein and Vandenberghe, 2002). Normative commitment refers to the experience of responsibility and obligation to continue employment at the organisation (Meyer and Allen, 1997).

To reduce the complexity of the thesis our focus lies on the inclusion of a set of foci representing all entities in the environment of the IPP rather than representing all types of commitment. The affective commitment dimensions (Meyer and Allen, 1997) are found to have the largest impact on job satisfaction, organisational citizenship behaviour, employee turnover and absenteeism (Klein et al., 2009). In addition, creativity studies have demonstrated intrinsic motivation and positive affect to be main predictors of creativity (Amabile, Barsade, Mueller and Staw, 2005). Therefore, the thesis focuses on affective commitment towards seven foci of commitment in IIPs.

Organisational commitment is argued to be a crucial psychological factor in the prediction of the behaviour of individual workers in organisations (Ellemers, et al., 1998). Organisational commitment has been related to organisational behaviour and job satisfaction

(Tam, Korczynski and Frenkel, 2002). Many studies have investigated the effect of organisational commitment on work effort and job satisfaction (Becker, Billings, Eveleth and Gilbert, 1996; Meyer and Allen, 1997; Mowday, Porter and Steers, 1982; Wallace, 1995). A general conclusion from these studies is that organisational commitment reduces turnover and absenteeism, and has a positive effect on extra role behaviour and job satisfaction.

Commitment to the occupation, the profession, the career and the job

Gouldner (1957, 1958) was the first to distinguish between commitment to the organisation and commitment to a higher professional entity. He makes this distinction between 'cosmopolitans' and 'locals'. In his description of cosmopolitans, elements of commitment to the profession but also of commitment to the occupation and commitment to the career can be found. From previous studies can be found that commitment to the profession, the occupation and the career, are strongly related concepts and show conceptual overlap.

A number of terms are used to refer to professional commitment, including occupational commitment, career commitment, and career salience (Wallace, 1993), and commitment to the job. Commitment to the profession seems to be the most identified and studied foci of commitment besides organisation commitment. An early description of professional commitment is provided by Thornton (1970), as an employee may become a local, he accepts and commits to the organisation, or a cosmopolitan and maintain his professional allegiance. Professional commitment is defined as "the relative strength of identification with and involvement in one's profession" (Morrow and Wirth, 1989: 41).

It is important to make a distinction in definition in this study between professional and occupational commitment opposed to career-oriented commitment or career salience, following Morin et al. (2009). Reicher's (1986) finds commitment to individual career goals to be distinct from commitment to the occupation or profession. This is in line with findings from previous studies (Ellemers, et al., 1998; Morrow and McElroy, 1993) which indicate career commitment to refer to the attachment to the progression of personal careers, whereas professional commitment refers to the attachment to the profession or occupation.

Morrow's (1993) model of five universal forms of work commitment includes a separate focus of commitment to the job. The discriminant validity of this foci was tested and confirmed in later studies by Cohen (1999). Cohen (1999) did find a mediation effect of job involvement in the relation between protestant work ethic and commitment to the organisation and the career.

Commitment to the project

In inter-organisational innovation projects the project is expected to be the focal entity of interaction for the time the project is running. The project takes place outside the boundaries of the organisation, nevertheless the project consists of a team working towards a project aim, therefore it shares characteristics with intra-organisational teams.

Commitments to the micro entities or intra organisational foci include work units, divisions, departments, and work teams. These micro, or within organisation commitments, are viewed as interpersonal commitments which are mutual commitments between individuals (Meyer and Allen, 1997). The most studied type of micro foci is the team or work group, defined as “the feeling to belong and emotional attachment to the work group” (Stinglhamber et al., 2002: 127). This is the felt attachment and the attributed importance targeted to this entity nested in the organisation, or in the case with IPPs, felt attachment with the individuals in the inter-organisational project team.

Commitment to the leader

Commitment to the leader or supervisor of a team or larger unit has received scholarly attention in the academic field of leadership, embedded in the concept of leader member exchange (LMX). However, commitment to the supervisor also been recognised as an internal organisational focus of commitment, next to commitment to the leadership team or top management team. In predicting discretionary behaviours such as creative behaviours, the supervisor may play a central role. Supervisors or leaders are indicated to be the agents of the organisation, or in the context of inter-organisational innovation projects, the agents of the project team (Eisenbergme Huntington, Hutchison and Sowa, 1986).

In the case of creativity, the leader of the project will be involved in decisions regarding the acceptance and support for novel ideas in the project team, therefore affecting employee behaviour. This has been recognised in the creativity literature, in which the leadership of creativity has received an extraordinary high level of scholarly attention lately. The work of Mumford has provided significant insight into the leadership of creativity (Mumford and Licuanan, 2004; Mumford, Scott, Gaddis and Strange, 2002), as well as the work by Shin and Zhou (2003) linking transformational leadership to the highest levels of creativity.

There are indications that commitment to the leader or supervisor to be a better predictor organisational citizenship behaviours rather than commitment to the organisation (Cheng, Tsui and Farh, 2002). Vandenberghe and Bentein (2009) found an interaction

between affective commitment to the supervisor and affective commitment to organisation in their effect on intention to stay with the organisation. They found a moderation effect of commitment to the organisation, in such that the relation between commitment to the supervisor and intention to stay was stronger under the condition of low levels of organisational commitment (Vandenberghe and Bentein, 2009).

Commitment to the client

Although the commitment to the client organisations is described as one of the lesser studied macro-foci of commitment (Vandenberghe, 2009), clients and customers are recognised to represent potential targets of employee commitment (Gregersen, 1993; Stinglhamber, et al., 2002). This focus of commitment and the impact of intense client relations on employees is also recognised by George and Chattopadhyay (2005). Their study contributes to the exploration of the social identification of contract workers with both the employer and client organisation.

Coyle-Shapiro et al (2006) identified the importance of commitment to both the organisation and the client. They studied the affective commitment to employing and client organisation among low term contracted employees, comparing the most well-established construct in the literature (organisational commitment) with the newest foci of commitment representing new emerging employer- employee relationships (Connelly, 2007). The two foci of commitment are found to be independent constructs and positively related to each other. Perceived client organisational support and attractiveness of the client organisation related positively to employees' affective commitment to the client organisation. On the other hand, affective organisation commitment was positively related to psychological contract fulfilment and perceived working relationship.

Swart and Kinnie (2012, in press) have recently included this focus of commitment in their empirical study of commitment in professional service firms. They indicate that commitment foci both internal and external to the organisation are recognised and, specifically, play a significant role in knowledge sharing. Furthermore, the organisation-client and profession-client interactions are suggested to be prone to tension, and this creates ambiguity for employees on their commitment to both foci. It is argued that not only contingency employees face 'commitment dilemmas', and the commitment to client organisations is linked to literature on boundary spanner positions (Olsen, 2007).

Coyle-Shapiro et al. (2006) have tested some interaction effects and found that affective organisational commitment mediates the effects of psychological contract fulfilment on client

affective commitment, is a positive interaction effect. They explain this relation by studying the relation between client commitment and organisation commitment, and indicate that the most important issue is found to be the perceived fit or congruence of values between the two organisations (Coyle-Shapiro, and Morrow, 2006).

2.2.2 Creativity

Despite over 60 years of scholarly interest, scholars have yet to reach an agreement on the assessment of creativity. This may be caused by the state of the field, as will be described in the following section, in which researchers have not been able to identify objective characteristics of creativity, apart from the characteristics of ‘useful’ and ‘novel’. Next to that, creativity is studied in four detached approaches, focussing on the creative person, the creative product, the creative process and the place in which creativity takes place.

Additionally, creativity literature is fragmented even more, as it is studied in a variety of scholarly disciplines, such as psychology, sociology, education, art, management and science (Runco, 2003). This all stands in the way of a unified and joined development towards a solution to the ‘criterion problem’, which is to reach a unified definition, and measurement of the distinctional facets of creativity assessment. A result of the problem described is that some creativity studies are conducted even in the absence of a clear operational definition (Amabile, 1996).

This section provides an overview of literature on creativity. First a historical overview of the field is provided, including cognitive, behavioural and system views that are often distinguished in the field. This section concludes with an indication of the gap in the creativity literature, which this thesis aims to fill. The second part of this section concentrates on the development of the concept of creative work behaviour based on existing concepts and elements of field theory. The contribution of the thesis to the creativity literature become clear by presenting the underlying rational, concept development and potential of the developed way of approaching creativity.

2.2.2.1 Historical overview creativity literature

In an early behaviouristic view Wallas (1926) developed a model of the creative process, based on testimonial accounts from scientists Hermann Ludwig Ferdinand von Helmholtz and Jules Henri Poincaré. In his work on creativity he focussed on the ‘incubation’ of a creative problem in the subconscious awareness as an ‘illumination’ or ‘insight’. In his view, any outcome from a creative process is viewed as a creative.

Other early developments are described as sharing this rather ‘mystical’ approach to the study of creativity (Sternberg, 2006). For example the psychodynamic approach to creativity, which is based on the Freudian believe that creativity develops from the tension between the conscious reality and the unconscious drives. Another example is seen in the developments in creativity studies in Gestalt psychology focused on the idea of insight. Wertheimer (1945)

described the creative process as a course of action in which insight and productive thinking takes place when the individual sees the essential features of a problem, and their relationship to a final solution. The insight approach by Gestalt psychologists stood in total contrast to the research paradigm of the fifties to use controlled, experimental methods. The almost spiritual character of creativity studies in the early developments caused the study of creativity to become an unconventional research topic in psychology (Sternberg, 2006).

An important turning point in this dominant ‘mystical’ approach is Guilford’s 1948 address to the APA, which is marked as the starting point of the revival of initiatives to study creativity. Guilford (1950) expressed his critique on previous work, referring to its reliance on case studies and prominent creative persons. In his view, the selection and interpretation of creative cases has limited the development of general theoretical constructs of creativity. In contrast to earlier developments, Guilford claimed it was possible to be ‘scientific’ about creativity.

Guilford suggested the APA to approach creativity as a more logical systematic process, and a construct with underlying observable and measureable conditions (Torrance, 1995). This resulted in a series of studies to focus on the search for (1) underlying cognitive abilities of creativity, (2) measurement of creativity comparable to IQ tests, and (3) the basis on which qualified observers describe somebody or something as ‘creative’. As a result, creativity became a mainstream research topic in psychology.

Guilford proposed to study creativity in the same structural way the concept of intelligence was studied. This changed underlying assumptions on the nature of creativity. In the vein of intelligence, creativity became seen as a continuum. This meant that creativity was no longer a unique talent, reserved for a specific societal group. Assuming creativity was the result of logical basic steps in the creative process, every individual may be creative if he or she wants.

The cognitive approach to the study of creativity may be seen as an approach following Guilford’s ideas and proposed changes to the way creativity was studied. This stream of research analyses the mental (cognitive) representations and processes underlying creative thought. Other examples of contributions in this approach are the Piagetian transformations which are based in developmental psychology. Here creativity is viewed as a ‘bi-sociative process’ the connection of two previously unrelated ‘matrices of thought’ to produce a new insight or invention (proposed by Arthur Koestler and Frank Wicker, in (Runco and Pritzker, 1999).

Like previous studies on intelligence, creativity studies also aimed to find a universal and objective set of conditions predicting creativity. Taking a psychometric approach, a group of studies was conducted to indicate personal cognitive abilities underlying creativity. Using personality and biographical inventories and behavioural tests, these studies have resulted in creativity tests, such as, the Torrance Tests of Creative Thinking (Torrance, 1995). Creativity is associated with intelligence, although this relation is only modest ($r = .20$). Several concepts are found to be stimulating or are related to creativity, such as intellectual and cognitive abilities (Ford, 1996; Guilford, 1950). The cognitive abilities related to creativity in previous studies are intelligence, divergent thinking, associational and analogical abilities, divergent thinking, and the ability to use metaphors or imagery (overviews by Barron and Harrington, 1981; Mumford and Gustafson, 1988). Since the death of Ellis Paul Torrance in 2003, considered by many "the father of modern creativity", only few studies follow his stance in the psychometric approach in studying creativity.

Behavioural approach: objective and subjective criteria

A series of studies have been conducted on the objective criteria of creativity in products, aiming to find generalized systematic basis characteristics, on which observers may describe somebody or something as 'creative'. These have found only two conditions which are argued to be the underlying aspects of creative products, these are novelty (originality, unexpectedness and newness) and usefulness (appropriateness, or adaptive concerning task constraints) (Amabile, 1996). These two conditions form the basis of the most used conceptual definition of creativity, which is: novelty and usefulness are required but not sufficient conditions for creativity (Amabile, 1996; George and Zhou, 2002; Oldham and Cummings, 1996; Sullivan and Ford, 2010).

It is debated whether these two conditions represent a single concept. It may well be that novelty and usefulness refer to a diverse set of underlying aspects of creativity, and novelty and usefulness may serve two distinct goals. It is also questioned whether the two criteria are sufficient to represent creativity, since some ideas may be novel and useful, but still not be recognised as creative. Some argue other aspects or characteristics need to be developed to be able to distinguish between creativity and non-creativity.

In reaction to the limited progress in the search for objective measures of creativity in individual cognitive abilities and product characteristics, another group of researchers began to focus on more subjective measures of creativity. Creativity in a product is difficult to characterize in terms of specific features, nevertheless, people are able to recognise creativity

when they see it (Cropley, 1999). Also, people who are familiar with the domain tend to agree on what is creative and what is less creative (Csikszentmihalyi, 1990). In the development of subjective judgments, an important contribution has been made by Csikszentmihalyi (1988), recognised by Peterson (2005), that creativity is not a component of the idea, the person, the innovation, or the product that is said to be creative. Rather, the acceptance or rejection of the creative idea, and even the recognition of the idea to be creative in the first place, are all dependent on the relevant others and the system(s) involved (Peterson, 2005). This follows the idea that the evaluation of creative ideas is based largely on social consensus (Sternberg and Lubart, 1995), and a product is seen to be creative when appropriate judges collectively agree that it is (Amabile, 1982).

In creativity studies today, and in the application of creativity measures in management studies, subjective measures are used most frequently. Creativity may be measured using the consensual assessment technique. Examples are expert nominations, teacher nominations, peer nominations and supervisor ratings. In management and organisation studies, a large number of studies focused on factors that stimulate and enhance creativity (Shalley, Zhou and Oldham, 2004). In order to do so, creative ratings are viewed as the dependent variable (George, 2007) and, therefore, measured by the recognition of a creative final product. For example, creativity is measured by the creative products rated by costumers, or in the study of employee creativity, the final creative ideas or the individual employee is rated on its creativeness by supervisors. As a result, both outcome focused and subjective measures are dominant in creativity studies.

The four Ps

Within creativity studies four different streams of literature may be distinguished, as suggested by (Rhodes, 1961). Runco (2004) has stated that this structure is probably the most often-used structure for creative studies. Rather than four different and separate approaches, it is an overarching format that groups creative studies (and findings) into the following categories: Product, Person, Process and Place (or press). Often the person (and personal characteristics) is seen as a predictor of creativity, product and the process are seen as criteria of creativity, and the place is seen as a moderating contextual factor in the process as either hindering or enhancing creativity (Mooney, 1963). Although studies have made progress in developing theories and providing empirical evidence within their P-field, few studies have aimed to combine understandings on creativity by cross fertilizing theories from one approach to another.

Person The majority of creativity studies have focused on the individual characteristics that are related to creativity (Livingstone, Nelson, and Barr, 1997). Characteristics discussed in the literature, include: self-confidence, autonomy, self-efficacy for creativity, a broad interest, perseverance, flexibility, risk-taking, high energy, highly intuitive, a creative self-image and attraction to complexity. The study of the creative person has also given some insight into the role inspiration plays in the creative process, as creative persons recall inspiration through a muse or moments of ‘insight’ (for example see Feldman, 1988). On the other hand, perseverance is said to be the basis of the creative experience, as stated in self-reports by Thomas Alva Edison, published in Harper’s Monthly in 1932 (in Cropley, 1999). Edison views the creative process of his experience and his large staff of engineers as the continuous improvement of existing knowledge, technology and ideas. Perseverance and knowledge are the basis of creative ideas, rather than inspiration, luck, or insight. His expression about his creative genius is that it is ‘1% inspiration and 99% perspiration’.

In relation to the above, it is not surprising to find that studies argue that, in addition to personality, motivational states and drive are also related to creativity (Runco, 2004). When employees follow intrinsic interests, and tasks are intrinsically motivating, this tends to positively influence creative behaviour (Amabile, 1997; Amabile, et al., 2005).

Product Studies focusing on the creative product aimed to find the more tangible and observable concepts representing creativity in a product. The outcome of the creative process is taken as the focal point in these studies, which is the evaluation of the final creative product. Mostly an experimental paradigm is applied; focusing on the general the conditions under which creative products are produced are assessed. In this way, creativity becomes a more variable and situation dependent state, as opposed to a more stable personality trait (Hennessey and Amabile, 2010).

This follows the attribution approach and places the creative product in its social context. In an interaction framework this has led to studies in which the evaluation of creative products is based largely on social consensus (Sternberg and Lubart, 1996), something is considered to be creative if and only if the creative ‘product’, or creative output of the process, is identified as creative by its environment (Amabile, 1996). In the contemporary literature, the assessment of creative products is based on consensual assessment by experts (Amabile, 1982; Hennessey and Amabile, 1992; Hennessey and Amabile, 2010).

Process Limitations of studies focusing on the creative product are described by Runco (2007). He argues that, although product-based assessment is useful and creative artifacts are easy to access, this type of assessment comes at the cost of more process-oriented and in-depth types of analysis. Additionally, the study of products may not reveal how creativity develops.

Based on the identification of creative people and self-reports of important creative experiences Wallas (1926) proposed a model of the creative process. This first model of the creative process is adapted by later studies (Patrick and Parnes, 1935; Csikszentmihalyi, 1990). This model is considered the most widely accepted modern phase approach to the creative process, suggesting seven stages: encounter (the identification of a problem or challenge), preparation (information gathering), concentration (the effort to solve the problem), incubation (ideas flow around and settle), illumination (a solution becomes apparent), verification (the solution is evaluated), and persuasion (the convincing of the appropriateness of the idea or solution) (Crompton, 1999: 309).

Wallas' model is considered as the basis for other models of the creative process. These models still refer to a stage of preparatory activities (such as information gathering and problem identification), followed by the insight or the reception of the creative idea. The initial creative idea needs to be developed and verified, which refers to the usefulness dimension of creativity.

Wallas's model is usually reduced to four phases: preparation, incubation, illumination and verification. The process model of creativity developed by Amabile (1988; 1996) is also based on Wallas' model, and includes (1) task presentation or problem definition, (2) preparation; information gathering and the consultation of resources, (3) idea generation, (4) idea validation; the checking of the developed idea against the criteria set, and, (5) the assessment of the outcome.

Two other models of the creative process are noteworthy. Sternberg (1982, 1985) has developed a process model of creative insight, including three activities: selective encoding, selective combination and selective comparison. This model emphasizes the usefulness dimension, underlining the importance of selection of the elements with the most potential to be combined in a novel way. Following the idea that problem finding is part of the creative process, Runco (1991) and others developed a model based on idea generation and idea evaluation. This model considers ideation and evaluation to be equally important in problem finding and, also states that they interact together in the creative process.

Place Under the fourth P, place or press, the environmental factors influencing creativity have only received scholarly interest since the mid-nineties. Mowday and Sutton indicate a weakness of creativity studies to be the lack of interest in organisational context (Mowday and Sutton, 1993). Some components of the organisational environment are studied to potentially influence creativity, although research is by far not as developed as the individual differences and influences on creativity. The few studies including environmental factors indicate the critical influence of support for individual creative endeavours (West, 1989; West and Farr, 1989), and have acknowledged this interactional framework for organisational creativity, resulting in the study of creativity as the interaction between the personal behaviour and the organisational context (for example Woodman et al., 1993). Another factor influencing creativity is a more flexible organisational structure, because of its association with autonomy (Kanter, 1988).

Systems view

Few researchers aimed to bring together cognitive and socio-personality approaches in the study of creativity as a more complex, but also more complete construct. The need for the integration of the various elements of the creative process was already indicated by Stein (1963), yet attempts were made to confluence theories in 'system theories' just in the late eighties and nineties. Aiming to integrate the cognitive and the social-psychological developments in creativity studies, the system views try to capture the individual and the influences of its environment in relation to creativity.

It is argued that creativity studies progress only little, without pursuing a select group of 'big questions'. This is due to the scattered field, with the most apparent split in creativity studies being the development in the cognitive approach, led by active studies by Guilford and Torrance, versus the socio-personality approaches, which more and more applied subjective measures of creativity. Additionally, the diving in the field according to the four P's, caused findings from one type of creativity study to be neglected in others. Driven by the acknowledgement that creativity studies were growing apart in different streams, because of different research fields and approaches, several studies applied systems views in the development of creativity models.

Through the years that creativity has been studied, creativity literature seems to increase the levels at which creativity forces operate (Amabile, 1996). Since the time Guilford addressed the APA in the fifties, creativity studies have focused on the neurological and cognitive creative processes. With personality tests and creativity tests, creativity became

recognised to be influenced by affect, cognition and training. Approaching creativity as a subjective and perhaps socially constructed concept, researchers became interested in the study of creativity at the group level dependent on its social environment (Csikszentmihalyi, 1990).

Several creativity theories are developed in the system view. Gruber (1988) developed a developmental evolving-systems model of creativity, based on creativity in education. His model of purpose, knowledge and affect includes both elements of the cognitive and socio-personality approaches in studying creativity in the learning process.

The system model of creativity by Csikszentmihalyi posits that the evaluation of a work product as both novel and appropriate arises from the interaction of a person, a field of gatekeepers, and a domain of symbolic knowledge (1988). Csikszentmihalyi (1988) initiated his system view of creativity, identifying three main systems involved in the creative process, embedded in each other. The first system, the 'person', refers to the individual processes. The second system is the 'domain', which is the group of people who are acquainted with the specific notation system and are able to make creative contributions. The field is the third system involved, and refers to the broader interested society, all who can 'affect the structure of the domain', and consists of 'a network of interlocking roles' (Csikszentmihalyi, 1988: 330).

The most developed and cited system view is developed by Amabile (Amabile, 1983, 1988; Amabile, 1996). Her model consists of task motivation, domain relevant knowledge and creativity-relevant skills as the main predictors of creativity and the creative product. A combination of these factors play together, as there is an interaction between the individual creativity and the context influencing the creative development. The social psychological model of creativity (Amabile, 1983; 1988) is a combination of dispositional, cognitive, and social factors influencing creativity (Livingstone et al., 1997).

The latest development into the direct of a systems view of creativity is grounded in investment theory, which is Sternberg's propulsion model. This model is based on the assumption that the creative process is embedded in a system, consisting of 'social networks, problem domains, and a field of enterprise' (1988: 430). The model hypothesizes that multiple components must converge for creativity to occur (Sternberg and Lubart, 1996). The importance of the context of the creative process is recognised by Sternberg (2006: 95), indicating that it may contribute to the understanding of how 'the context interacts with how people are judged'. Linking together the evaluation (or judgemental) part of the creative process with the contextual influence, Sternberg (2006) argues that a creative contribution

may be able to steer a field (or domain) into a certain direction. This indicates that creativity may be strategic or, in Sternberg's words, the nature of creativity is propulsive (Sternberg, 2006: 95).

Research gap

Following the behavioural approach towards creativity only little agreement exists, and the various research streams have developed independently. In the person view creativity has been approached as a personal attribute or trait, or in the subjective approach creativity is the extent to which the person is judged to be a creative person. However, creativity has been described in such a way that every individual is able to express lower levels of creativity by doing something in a useful and somewhat novel way (Mayfield and Mayfield, 2010). This indicates creativity can be something individuals chose to do rather like a state or a type of behaviour, rather than a trait or more fixed characteristic of a person.

Creativity has been studied focussing on the creative outcome, at the point at which creativity is valued (as the subjective recognition). In organisation and management studies creativity is often rated by the supervisor, which has as a disadvantage that it remains unclear which creative ideas and developments take place in the start and middle of the creative process, unseen and unrecognised by supervisors. This critique on the 'outcome' based approaches to creativity is shared by Runco (2003) in such that creative potential and personal creative efforts are often unrecognised.

Runco (2004) refers to the product oriented focus which is stated to neglect the more personal experience of creativity. This critique applies in particular for creative products, as final stage products are evaluated. Nevertheless, even with studies on the creative process this problem appears, as the creative outcome is identified and the process that has advanced is studied. If creativity is selected by the recognition of the creative outcome, the selection bias identified by Guilford is still existent in current creativity studies.

Creativity literature acknowledges every individual to be able to be creative. However, in creativity literature creativity has been studied as a person, a process, a product and a place, this has limited the possibility to look at creativity as a specific type of employee behaviour. The difference in approaching creativity as behaviour means a change of ontological stance on individual behaviour to be voluntary action under the control of the individual. Approaching creativity as a type of behaviour includes recognizing the individual to have the ability to choose to what extent and what type of behaviour he or she engages. In the following section this idea will be conceptually developed.

2.2.2.2 Creative Work Behaviour

In this section the concept of Creative Work Behaviour will be developed to fill the research gap identified in creativity literature in the previous section. First a comparison and distinction will be made between innovation literature and creativity literature, including which ideas for conceptualization can be borrowed from this field. Second, two existing concepts and literature on the creative process will form the basis of the conceptualization creative work behaviour. Third, concluding this section the different types of creative work behaviour will be developed.

Innovation literature

In contrast to creativity literature, in innovation literature the concept of innovative work behaviour has been conceptualised and developed. Innovative Work Behaviour (IWB) is defined as the *intentional* creation, introduction and application of new ideas within a work role, group or organisation, in order to benefit role performance, the group, or the organisation (West and Farr, 1989: 174). The foundation of all innovative improvements is ideas (Scott and Bruce, 1994) and it is argued that the person or individual develops, carries, reacts to, and modifies these ideas (Van de Ven, 1986).

The concept of innovative work behaviour draws on Kanter's (1988) work on the stages of innovation, including idea generation, idea promotion, and idea realization (Janssen, 2003). The first stage consists of individual problem recognition and the generation of novel and useful ideas or solutions. The second stage comprises the seeking of sponsorship and the building of a coalition; the search for support for the individual creative idea. The last stage of the innovation process includes the completion of the idea into a final 'product', that may be applied, implemented, produced or institutionalized (Kanter, 1988). Organisational creativity is often viewed as a subset of innovation, creativity relates to a new product, service, idea, or process, while implementations of the latter takes place through innovation (Amabile, 1988). The elements of idea promotion and idea implementation are specific to innovation.

The emphasis on the individual effort in the creative process is introduced by Janssen (2000), reframing the IWB concept by highlighting the individual effort in creating, introducing, and the application of new ideas in the workplace. In this study of IWB, the generation, promotion and realization of innovative ideas for improvements, is identified as extra role behaviour (Katz and Kahn, 1978). A similar approach is taken by Choi (2007) who included expressed creative ideas as a form of organisational citizenship behaviour. The

individual engagement in innovative activity is expected to result in an increase in innovative performance.

This relation is analysed by Janssen (2000) by two measures of IWB, a self-report and a supervisor report, which showed a relatively high and significant correlation of .35. Exploring IWB in a person-environment fit theory and social exchange theoretically framework, Janssen (2000) stresses the idea that the individual employee may be stimulated by the organisational environment to respond by engaging in innovative activities. This study finds a moderation effect of effort-reward fairness on the relation between job demands and innovative work behaviour. Only when employees experience fair rewards for their effort, do higher job demands lead to higher innovative work behaviours.

From elements from concept of innovative work behaviour that can be adapted to develop the concept of creative work behaviour are 1.) creative work behaviour can be developed from behaviour related to the stages of the creative process, 2.) creative work behaviour can be described as a specific type of extra role behaviour, 3.) more and more frequent engagement in creative work behaviour is expected to be an antecedent of creative outcomes, 4.) creative work behaviour is likely to be a separate construct from creativity rated by supervisors, however is expected to be related as antecedent, and 5.) creative work behaviour may be stimulated or stifled by the organisational environment.

The concept of creative work behaviour may be developed from the lessons learned from innovation literature. The development of this concept separately from innovative work behaviour is relevant since it is increasingly recognised that creativity does not necessarily take place in the early phases of the innovative process, creativity and creative efforts play a role in all of the various stages of the innovation process. In this approach creativity in organisations is viewed as the continuous effort of the individual, to develop, carry, react to, and modify ideas (Van de Ven, 1986).

Engagement in creative tasks

Recently efforts have been made to conceptualise creativity into the direction of creative work behaviour, these are employees' engagement in creative tasks (Carmeli, Reiter-Palmon and Ziv, 2010) and creative process engagement (Zhang and Bartol, 2010a, 2010b). Employees' engagement in creative tasks is concerned with the individuals' engagement in creative work behaviours related to the 'creative task'. This concept is developed on the basis of the description by Carmeli and Schaubroeck (2007) of employees' general engagement and involvement in fulfilling the demands of creative work. These behaviours are indicated to

include, for example, suggestions for change and recommendations for modifications to procedures (Van Dyne and LePine, 1998), and are generally described as the individuals' expression of creative and innovative behaviours at work (Carmeli et al., 2010).

In this concept creativity is a 'creative task', and the employee's involvement in this task is the direct input expecting to result in creative ideas. The creative process is viewed as a less systematic and straightforward process, therefore the creative effort plays a continuous role. It is stressed that creative work receives time and attention from the individual employee, in analysing and identifying solutions for complex, novel, and ill-structured problems (Mumford, Decker, Connelly, Osburn, and Scott, 2002). The employee's involvement in the creative process is expected to result in creative ideas or success in creative projects; in order to do so the creative tasks demand priority, involvement and engagement (Carmeli and Schaubroeck, 2007).

Several different descriptions of the creative task are provided, however the behaviour measured fails to completely represent any of the definitions of the construct. It seems the authors refer to a broader idea which may be measured with multiple underlying constructs, rather than a single concept. The measurement model applied in Carmeli et al., and Carmeli and Schaubroeck (2007, 2010) is based on a prior measure developed by Tierney, Farmer, and Graen (1999). The four items measure the demonstration of originality, trying out of new ideas and approaches, the identification of new opportunities and the generation of novel but operable work-related ideas.

Several aspects of this creativity concept are defined or described but remain unmeasured, which is the case for the identification and solving of problems which is mentioned in the description referring to Mumford et al. (2002). Other dimensions relevant to a successful completion of a creative task remain undefined, such as the validation of ideas (Amabile, 1996). The two studies using engagement in creative tasks and measure this concept empirically have found several environmental effects to influence the employees' involvement in the creative task. Carmeli et al. (2010) found that inclusive leadership increases employee involvement in creative work, when mediated by psychological safety. Carmeli and Schaubroeck (2007) included in their study the effect of three parties, the perceived expectations of the leader, customers, and the family. When the employee perceives these parties to have high creative expectations, and this employee has high self-expectation to be creative, high involvement in creative work results. This effect is moderated by self-efficacy for creativity, in such a way that when employees see their selves as highly creative efficient, expectations from the environment are more likely to lead to higher values

of engagement in creative tasks. Unfortunately these studies have neglected to compare the employees' involvement in the creative task with any other creativity related concept, such as supervisor ratings of creativity or ratings of the creative product.

Creative Process Engagement

The second concept, creative process engagement builds on the established idea that individual (intrinsic) motivation to engage in the creative process is an essential element in creativity (Amabile, 1988; 1997; Carmeli and Schaubroeck, 2007). Following Amabile's (1982) conceptual definition, rather than the operational definition, employee creativity is defined as the production of ideas, products, or procedures that are both novel or original, and potentially useful to the employing organisation. Creative process engagement, which is defined as "the employee involvement in creativity-relevant methods or processes, includes activities related to (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation" (Zhang and Bartol, 2010a; 2010b). The engagement of the employee in these creative activities is expected to promote employee creativity in such a way that, when employees show higher levels of this type of behaviour, this increases the chance of the development of both novel and useful solutions (Zhang and Bartol, 2010a).

This follows the idea that for a creative process to succeed and lead into creative achievement, it requires intensive participation and involvement. This is also in line with the idea that the effort to engage in the creative process is described to be extraordinary, in such that the attention and time it requires may cause tension in competing with other work commitments (Carmeli and Schaubroeck, 2007). Creative process engagement combines the benefits of following a process approach to creativity as put forward in the innovation literature, and the focus on engagement and individual effort in creative work behaviour following engagement in creative tasks.

Whereas engagement in creative tasks seems to neglects to capture the complexity and to represent the stages of the creative process, creative process engagement represents at the first three stages of the creative process. Engagement in the creative process involves three types of behaviour related to the creative process based on Amabile (1983) Perry-Smith (2006) and Reiter-Palmon and Illies (2004), problem identification, information searching, and idea generation. This definition and conceptualization of the creative process builds on the work of Amabile (1982; 1983), and Perry-Smith (2006), who refer back to the first creative process stage model developed by Wallas (1928).

However, the final stage of creativity, the evaluation of creative ideas is not included in the conceptualization of creative process engagement. Even though it is included in the definition of the creative process, the concept of engagement in the creative process does not seem to represent the ‘usefulness’ condition, which is expected to be related to the later stages in the creative process including response evaluation and validation (Amabile, 1996). Amabile (1996) argues that the entire process of creativity includes crucial elements in the creative process of newness and usefulness.

The CPE concept follows the idea that creativity is believed to be based on new combinations and restructuring of existing knowledge structures (Mobley, Doares, and Mumford, 1992; Mumford and Gustafson, 1988; Simonton, 2005). New knowledge is generated, combined, applied, and restructured into novel solutions (Mumford, Baughman, and Sager, 2003). In creativity studies in organisations, creative ideas are believed to be based on hard work and sustained effort over time (George, 2007). This may be explained by basing of creative ideas on domain specific knowledge, whereas to gain knowledge an effort has to be made (Amabile, 1988; Amabile, et al., 1996).

When employees frequently engage in creative activities, this is expected to stimulate creative activities, for instance that when employees more frequently search for novel solutions this increases the chance of developing a novel and useful solution. By spending time and effort on collecting a considerable package of information, generating a large number of ideas, and by aiming to become highly involved in the problem, the chance of obtaining a creative outcome is enlarged (Zhang and Bartol, 2010a). On the other hand, minimal engagement in the creative process is expected to lead to elementary and straightforward solutions. This follows the idea of creativity as motivation and more persistence based, rather than creativity based on inspiration.

What should be mentioned here is that the engagement element in this concept causes confusion in the creativity literature. The CPE concept follows a same conceptualisation as innovative work behaviour, however, by labelling the concept creative process engagement the concept is likely to be confused with work or job engagement. This creates conceptual misunderstanding.

Also engagement in creative process engagement is incorrectly describing the concept since the measurement of CPE refers to the frequency rather than the level of engagement the employee shows in the behaviour or activities related to the creative process. The concept encloses the various levels or frequency of performing the activities and behaviour related to

the creative process. This is similar to innovative work behaviour, which refers to the *intentional* behaviour related to the innovation process (Janssen, 2003).

Development of the concept Creative Work Behaviour

In the conceptualization of creative work behaviour we adopt the concept of Creative Process Engagement, the definition and the measure. However, in order to avoid confusion with other attitudinal and behaviour concepts used in organisation studies, such as involvement and engagement in (organisational) behaviour, in this thesis the name creative process engagement will not be adopted. Based on this, the definition of Creative Work Behaviour is the individual's involvement in creativity process related methods or processes, including activities related to (1) problem identification, (2) information searching and encoding, (3) idea and alternative generation. The assumption is made that Creative Work Behaviour is a deliberate (required or voluntary) and intentional undertaken type of behaviour (Ford, 1996).

The phases of the creative process

The existing concept is limited to behaviour in the first three phases of the creative process, which are included by Zhang and Bartol (2010a, 2010b). Later stages of the creative process are indicated in several theoretical developments (Wallas, 1926; Runco, 1999; Amabile, 1996). The literature on the stages of the creative process overviewed in the previous section provides support for the inclusion of an evaluation phase in the concept of creative work behaviour. On the basis of the developed model of creativity, it is stressed by Amabile (1988: 126) that the “entire process of creativity should be considered a crucial element in the process of creativity”. Therefore in the concept of creative work behaviour, behaviour relation to the fourth phase of the creative process will be included, which is defined as the evaluation stage of the creative process. Table 2.1 present the descriptions from the literature on the phase in the creative process after the generation of an idea.

Table 2.1 Overview literature on fourth phase of the creative process

<i>Study</i>	<i>Description of the fourth 'evaluation' phase</i>
Wallas (1929)	Verification, the evaluation of a solution
Cropley (1999)	Persuasion, convincing of the appropriateness of the idea or solution
Amabile (1988; 1996)	Idea validation, checking of the developed idea against the criteria set The assessment of the outcome
Sternberg (1982, 1985)	Selective comparison, elements with the most potential to be combined in a novel way
Runco (1991)	Continuously idea generation in interaction with idea evaluation

Table 2.1

Types of creativity

Besides the addition the phase, two types of creative work behaviour are recognised to be incremental or radical in nature, as opposed to routine types of behaviour. The literature on the types of creative work behaviour will be reviewed and the types of creative work behaviour will be conceptually developed.

Examples in the creativity literature that described the different type or levels of creativity are plentiful. One distinction has been made on who is involved in creativity, in such that every individual is able to express lower levels of creativity by doing something in a useful and somewhat novel way (Mayfield and Mayfield, 2010). As opposed to the higher levels of creativity, which can be described as the extraordinary ideas developed by geniuses transforming a field or even societies, perhaps not expected by every individual.

Related to the above is the distinction that has been made between radical and incremental innovation (Dewey and Dutton, 1986), which is similar to radical and incremental creativity (Amabile, 1996; Mumford and Gustafson, 1988), and similar to explorative and exploitative orientations (Benner and Tushman, 2003). In creativity studies the differentiation in this respect focusses on the level or dimension of creativity, differentiating between minor alterations and more radical breakthroughs (Amabile, 1996; Mumford and Gustafson, 1988; Sternberg, 1999; 2006). It is indicated that in some circumstances incremental ideas are more desirable, whereas in other circumstances more radical ideas might be valued (Shalley, Zhou, and Oldham, 2004).

In specific, Sternberg's propulsion model consists of types of creative contributions that differ in the extent of change they aim to make to a field. The first types are less radical or controversial and, therefore, initiate less change to the shared views of the 'crowd', than the

later types, which are crowd defying. Sternberg (2006: 96) is quite vague about the effects of the ‘more crowd defying’ types of creativity, indicating no more than that ‘people may not react well’. Internal reward is one of the major sources that are indicated by Sternberg (1998) as rewards for nonconformists as a trade-off for the ‘people who may not react well’. This is described as the creative fight for beliefs with the satisfaction of knowing that highly creative people are saying and doing what they believe in. In this thesis Creative Work Behaviour is categorized into (i) incremental and (ii) radical types. To contrast Creative Work Behaviour with non-creative type of behaviour, we include routine behaviour in the conceptualization of CWB. Table 2.2 presents the theoretical descriptions of the incremental and radical types of creativity, which will be the basis of the development of the measurement of incremental and radical creative work behaviour.

Table 2.2 Overview literature on creative types: incremental and radical

<i>Study</i>	<i>Type</i>	<i>Description</i>
Zhang and Bartol (2010)	I*	Multiple perspectives, decompose, alternatives Consult a wide variety of information Looking for new connections between seemingly diverse areas
Sternberg (2006)	I	Replication, redefinition, forward incrementation
	R	Redirection, Reconstruction, Reinitiation
Mumford and Gustafson (1988)	I	Minor adaptation
	R	Radical breakthrough
Madjar et al. (2011)	I	Incremental or 'adaptive' ideas which imply few or minor modifications to existing practices and products Adapting existing ideas, modification of existing work processes
	R	Radical or 'divergent' ideas which differ substantially from an organization's existing practices New and set-breaking frameworks or processes Originality, risk, radical new ways of doing,
	Rt	Effective activities, in-role, routine work
	I	Familiar algorithms, minor adaptations
Amabile (1996)	R	Set-breaking heuristics and radical breakthroughs
Mayfield and Mayfield (2010)	I	Doing something in a useful and somewhat novel way
	R	Geniuses transforming a field or even society

* I = Incremental, R = Radical, Rt = Routine Behaviour

Table 2.2

The creativity literature has distinguished between these levels or types of creativity, however empirical distinctions between types or levels of creativity are rare, and has hardly ever been measured as a multiple dimensional concept. Findings from the few studies making the distinction show the considerable difference of the separate forms of creative performance (Madjar, Greenberg, and Chen, 2011; Gilson and Madjar, 2011). The empirical studies have been distinguishing between routine, incremental and radical types of creativity. Table 2.3 shows an overview of the empirical findings on the associations between the types of creative behaviour (routine, incremental and radical) and various work related constructs (Madjar et al., 2011, and Gilson et al., 2011). From the overview it becomes clear how different in nature incremental creativity is from radical creativity. Therefore, we may expect a different relation between the multiple foci of commitment and creative work behaviour for incremental and radical types of creative work behaviour.

Table 2.3 Overview empirical findings antecedents of the types of creativity

Concept	Regression loading
<i>Radical Creativity</i>	
Intrinsic motivation	.20*
Abstract theory-related ideas	.20*
Problem-driven creativity	.17*
Willingness to take risks	.23**
Career commitment	.21**
Resources for creativity	.32**
<i>Incremental Creativity</i>	
Extrinsic motivation	.26*
Concrete practice-driven ideas	.27*
Solution-driven creativity	.16*
Presence of creative co-workers	.21*
Organisational identification	.30*
<i>Routine behaviour</i>	
Conformity	.44**
Organisational identification	.16*

Table 2.3

Entries are standardized beta coefficients from two studies Madjar et al., 2011 and Gilson et al., 2001,

* Effects are found to be significant with $p < .05$,

** Effects are found to be significant with $p < .01$.

In this section of chapter two the construct of creative work behaviour has been conceptually developed recognizing behaviour related to the fourth stage of the creative process and distinguishing between two types of creative work behaviour. This conceptual development will be followed by a methodological development. From theory, interviews and a pilot study a survey tool is created to measure this concept in chapter four. The next section will progress the conceptual framework and hypotheses on the effects of the seven foci of commitment on routine, incremental and radical creative work behaviour in the context of inter-organisational innovation projects.

2.3 An integrated research model and hypotheses

The first section of this chapter has explicated the research gap this thesis is addressing and provided an introduction to the field theory which is applied in this thesis. The second section has provided an overview of the literature and the conceptual development of the two main fields of this thesis. In the third part the relations between the multiple foci of commitment and creative work behaviour will be assessed, specifically the relations between multiple foci of commitment relevant to IIPs (project, organisation, profession, supervisor, client, job, career) and types of creative work behaviour (incremental and radical) related to the four phases of the creative process.

This chapter starts with the introduction of a series of analytical approaches which have been applied by previous research in the analysis of the impact of commitment on employee behaviour. This is an important step in the development of the theoretical framework, because the analytical approaches determine the view on the relation between the multiple foci of commitment in their effect on creative work behaviour. In this way the theoretical framework can be developed more specifically for each type of effect or interaction effect. Additionally, the section outlines the rationale for the three selected approaches for analysing commitment – creativity relations.

Following this introduction of the analytical approaches, the theoretical framework introduced in section 2.1.2 will be developed separately for each analytical approach. First, a model will be developed hypothesizing the *direct* effects of the seven foci of commitment on the three types of work behaviour (routine, incremental, radical). Second, three key-mediation models will be hypothesized including *mediation* effects between the multiple foci of commitment in their effect on the three types of creative work behaviour. Third, following a person-centred type of analysis the effects of *profiles* of multiple foci of commitment on the types of creative work behaviour are theorized.

2.3.1 Analytical approaches

Two general analytical approaches can be identified, these are the variable-centred and the person-centred approach. In the analysis of the effects of commitment attitudes on behavioural outcomes, the dominant approach is the variable-centred approach (Meyer, Stanley, & Vandenberg, 2013). In this approach, respondents are assumed to be homogeneous and commitments are best represented by a general commitment model in which commitment independently affects outcomes. Within this approach, different types of regression analyses are used to test the direct or “main” effects of the separate foci of

commitment on behavioural outcome variables. The aim of these studies is to determine the similarities and differences among the antecedents and outcomes of commitment to various entities (Meyer and Allen, 1997), and the assessment of the strength of the effect of commitments on employee behaviour.

Secondly, within the variable-centred approach several studies have focussed on the interaction effects between foci of commitment, specifically moderation and mediation effects between multiple foci of commitment in their effect on employee behaviour. This underlines the idea that different foci of commitment may interact with one another, in relation with outcomes of commitment (Johnson, Groff, and Taing, 2009). The study of moderation effects between multiple foci of commitment is limited to a few studies (for example, Chang, 1999). In addition, moderation effects are likely to be captured by the person-centred approach. Therefore, this thesis will focus on key-mediation effects between multiple foci of commitment for the reason that this approach has been taken by multiple key researchers in the field. An overview of the studies using this model will be provided followed by hypotheses on mediation effects in the relations between multiple foci of commitment and creative work behaviour.

Thirdly, another group of studies applies a person-centred approach towards the study of the multiple foci of commitment. These studies aim to capture the complex interplay among the multiple mindsets of commitment (Klein, et al., 2009; Meyer and Herscovitch, 2001), with each mindset to include a characteristic set of commitments towards multiple foci. This group applies content analysis, cluster analysis and latent profile analysis, to create commitment profiles.

The person-centred approach to forming commitment profiles is emerging as a promising direction for future research (Meyer, Stanley, & Vandenberg, 2012), particularly because synergistic effects between multiple targets of commitments will be underestimated by a variable-centred test of the independent effects. This is because the variable-centred analyses of interactive effects will typically include a reduced number of all possible two-way interactions that may completely misrepresenting the underlying typologies of employees' profiles across multiple dimensions of commitment (Morin et al., 2010a). Alternatively, a person-centred perspective is able to take into account these interaction effects, analysing relations based on typologies of persons and how they vary within these typologies, rather than an oversimplified synthesis of some possible variable-centred interactions.

In the third part of this section the studies that have used this approach in studying multiple foci of commitment will be outlined. Since the person-centred approach is explorative in nature, and studies on the profiles of multiple foci of commitment are scarce, we describe expectations of profiles and their relations to creative work behaviour rather than setting hypotheses in this section.

2.3.2 Approach 1: the direct effects

The development of the conceptual framework of this thesis has started with the introduction of field theory and attitude-behaviour relation in section 2.1.2. Field theory is used as the theoretical framework for the development of a conceptual framework, and is the fundament of the development towards hypotheses relating the seven foci of commitment to creative work behaviour. In this section field theory, and a series of related constructs, will be applied and this will feed into the development of hypotheses.

From field theory comes that the feeling of attachment and closeness to the field (focus) is developed by and maintained through repeated interaction with the individuals in the field. In the inter-organisational innovation projects employees are expected to interact with multiple fields at least to some degree. This interaction may then lead to the development of a level of affective attachment. These attachments are conceptualised in the construct of multiple foci of commitment, representing the individual bond between the employees in IIPs and the entities in this context.

Following field theory, the influences from the most immediate work environment is expected to have the strongest effects, while the most distant entities will only exert marginal effects on the individual behaviour (Mueller and Lawler, 1999). This means that a general positive effect of commitment on employee behaviour may be expected, in such that when employees have affective commitment to any foci or target in the work environment, it will have a positive effect on their behaviour related to that focus. More specific, when employees feel closer to some of the entities, these particular entities are expected to influence the behaviour related to this entity.

This idea, based in field theory, can be linked with a series of concepts arguing similar effects, including (1) attitude-behaviour linkages, which are found to be stronger when the specificities of the constructs are matched (Fisher, 1980), (2) correspondence between the target and the action elements of the attitudinal and behavioural entities (Ajzen and Fishbein, 1977), and (3) the principle of matched level of analysis in the commitment-behaviour relationship (Vandenberghe, Bentein, and Stinglhamber, 2004). When applied to commitment

in its effect on behaviour this means that commitment to a particular focus effects behaviour related to that focus. For example, when employees have high levels of commitment to the organisation, this has the largest effect on behaviour related to the organisation, such as organisation citizenship behaviour.

In addition to this, following the idea of *matched level of analysis* (e.g., Bentein, Stinglhamber and Vendenberghe et al., 2002) and field theory, it is suggested the focus most proximal to the employee affects the behaviour of the employee most strongly, however, multiple fields may be experienced as proximal. Approaching commitment to multiple foci as separate constructs, each with their unique effects, seems to be in line with both field theory, the proximity or salience of behaviour (Lewin, 1943), and the principle of matched level of analysis in the commitment behaviour relationship (Bentein, et al., 2002). This means that commitment to multiple foci each have an effect on individual behaviour and, in addition to this, each specific focus of commitment may have an effect on slightly different behaviour relevant to the focus.

Riketta and van Dick (2005) conducted a meta-analytic review on the impact of organisation and workgroup attachment on work attitudes and behaviours. This study confirms Mueller and Lawler's (1999) proposition that organisation attachment does influence workgroup related behaviour, but the average workgroup attachment (the 'closest field') is stronger than average organisational attachment.

Following this in the context of IIPs, due to the aligning of the target attitude (commitment) with the action element (behaviour in the project) commitment towards the project is expected to be most proximal, having the strongest effect on behaviour related to the project. It is therefore expected commitment to the project and commitment to the lead project manager to have the strongest effect on routine behaviour in the project. If the innovation project and its leader are experienced as a proximal field, then the employee is likely to develop an affective commitment attitude towards the project. This proximal field will then have a strong influence on routine (in-role) behaviour on the project following the principle of the matched level of analysis.

In addition to this strongest effect, the five other foci of commitment (organisation, client, job, career, and profession) may affect employee behaviour positively, in that employees may show more positive routine or in-role behaviour on the project. However, this will be dependent on the extent to which commitment to the other five foci are related to commitment to the project and the lead project manager. Following the matched level of analysis, it is hypothesized that affective commitment to the other foci than the project and

the lead project manager may have an additional effect, however, this will be a weaker effect and may affect employee behaviour only indirectly.

This leads to the following hypothesis:

Hypothesis 1: Affective commitment will be associated with routine behaviours matching the focus of commitment as follows:

1a. Affective commitment to the project will positively affect routine behaviour on the project.

1b. Affective commitment to the lead project manager will positively affect routine behaviour on the project.

Drawing on field theory, the interaction, dynamics and attachment to the project and lead project manager determine the behaviour expressed in the project. Nevertheless, based on previous research on the nature of the types of creativity in the previous section, there is reason to believe the action-target similarity may be different between the three types of work behaviour, routine behaviour, incremental creativity and radical creativity. A recent study on creativity has found the configuration of contextual factors to drive different performance outcomes including radical creativity, incremental creativity and routine work (Madjar, Greenberg and Chen, 2011). Findings from this study suggest that the focus of attachment (Madjar et al, 2011, who include the organisation and the career) determines different directions and targets and, therefore, different types of behaviour.

Creativity and creative behaviours have been identified as a specific type of behavioural options competing with more habitual actions and routine behaviour (Ford, 1996). The distinction between creative and non-creative behaviour lies in the generation of ideas that are beyond the routine behaviour on the project. Therefore these behaviours may not only be directed at the project and lead managers, but also at groups outside the direct context of the project. This means the decision to engage in creative behaviours is expected to be still dependent on how employees in IIPs develop commitment to the field related to the project and its lead manager. Yet, beyond the project, creative work behaviour may be expected to be influenced by a different set of foci of commitment than the foci associated with routine behaviour.

Incremental creative behaviour is directed at improving, developing and generating ideas in regard to improving the work in the innovation project. Both routine behaviour and incremental creative work behaviour are expected to be predicted by affective commitment to the project because the local context of the project facilitates these types of behaviours. This

is in line with empirical findings, in which commitment to the local environment is held to be important for knowledge creation and is related to change-oriented Organisation Citizenship Behaviours, which includes creativity (Choi, 2007; Thompson and Heron, 2005).

On the other hand, improvements in the innovation project may be targeted at changing the wider domain, which stretches beyond the project. Garsten (1999), in literature on temporary employees, as well as Hunt et al. (2004), in a study of leadership of symphony orchestras, indicate that the individual creative employee is looking for interpretive insight and some stimulation in a creative direction. Information from various parties related to the project may serve as a source delivering input to the creative process. In other words, interaction with various parties may stimulate the development of creative ideas.

The role of the project is the context and facilitator of the creative behaviour, however, multiple parties are involved in the providing and obtaining of creative ideas. This is in line with previous empirical findings, in which commitment to the team, personal involvement, team identification, and the commitment to excellence are found to be requisites for success in innovation teams (du Chatenier, Verstegen, Biemans, Mulder, and Omta, 2010; Mascitelli, 2000; Paulsen, Maldonado, Callan, and Ayoko, 2009; West et al., 2003).

In the investigation of which foci of commitment may play a role in relation to incremental creative behaviour, incremental creativity has been related to the presence of creative co-workers (Gilson and Madjar, 2011). The interaction with a wider group of experts may be both the source and target of this specific type of work behaviour. Interaction with the professional environment has been compared with commitment to the profession by Ng and Feldman (2009), who analysed occupation embeddedness using measures resembling professional commitment. Their study found a positive direct effect of occupational embeddedness on creativity (.28), which confirms the central role of commitment to the profession in relation to incremental creative work behaviour. Similarly, Teigland and Wasko (2009) found a stronger positive correlation between professional commitment and creative performance (.28), than the positive correlation between organisational commitment and creative performance (.24). This confirms the concept of incremental creative behaviour to be directed at groups both in and beyond the project boundaries.

The literature on boundary spanners provides additional insight into how this works. Dyer et al. (1998) indicate that partners in an alliance are each other's most important source of new ideas and information, which may result in new technology and innovations. Innovative ideas, new practices and concepts are the result of the interaction between

different functional departments, as well as the result of cooperation between different organisations (Hsu, Wang, and Tzeng, 2007).

Concluding from this it is expected that 1) incremental creative work behaviour, like routine behaviour, is predicted by commitment to the project and the lead project manager, in addition 2) incremental creative behaviours are also targeted at other entities beyond the boundaries of the project, mainly the parties involved in information sharing and idea generation. This can be seen as an extension of the principle of the matched level of analysis, in which incremental creative work behaviours cover a wider range of targets, and are therefore predicted by a wider range of foci of commitment.

Frequent interaction with foci that are important sources of new ideas and information will affect the employee in choosing to engage in creative extra role behaviour. Csikszentmihalyi (1988) system model of creativity, as well as Amabile's (1996) system model, both recognise the interaction with a professional field and a domain of knowledge in making creative contributions. Feeding these ideas back into the context of IIPs, the most central groups in the professional field are the employing organisation, the client and the profession.

The employing organisation in IIPs is, as a partner in the innovation project, an important source of information and target of creative ideas. Interaction with other professionals in both the employing organisation as well as the client organisation, may support in the development of new and useful ideas. The involvement of the client in the project, interaction and knowledge sharing is a source of motivation to becoming engaged in incremental creative work behaviours. Creative ideas in relation to the project may be targeted at providing solutions for this client. Interaction with the organisation, the client and the profession are more likely to provide access to concrete, practice- and solution driven ideas, which have been found to empirically relate to incremental creativity (Madjar et al., 2011).

This leads to the following hypothesis:

Hypothesis 2:

Affective commitment will affect incremental creative work behaviours as follows:

2a. Affective commitment to the project will positively affect incremental creative work behaviour.

2b. Affective commitment to the lead project manager will positively affect incremental creative work behaviour.

2c. Affective commitment to the organisation will positively affect incremental creative work behaviour.

2d. Affective commitment to the profession will positively affect incremental creative work behaviour.

2e. Affective commitment to the client will positively affect incremental creative work behaviour.

Radical creativity distinguishes itself from incremental creativity by its radical and crowd defying nature (Sternberg, 1999). Multiple sources, radically different thoughts and contrasting perspectives are necessary to develop radical creative ideas. Interaction with a multitude of sources will increase the likelihood of employees working in IIPs developing radically new ideas. Profession specific, problem-driven, abstract and theory related ideas are more likely to be discussed with parties outside the direct environment of the project, and have been found to empirically relate to radical creativity (Madjar et al., 2011).

The parties sharing the knowledge necessary for the development of radical creative ideas may be found primarily outside the project context of IIPs, including clients and others in the professional field. In addition to that, radical creative ideas may not be directed at the project but targeted at changing perceptions beyond the scale and scope of the project. Thereby the project a channel, rather than a target, through which radical creative ideas are expressed aimed at changing the wider professional field.

Additionally, radical creative work behaviour may defy the team members on the project and its lead project manager because of their uncompromising and extreme nature (Sternberg, 1999). Radical creative ideas are aimed to change the larger field, and this may distress the parties most strongly related to the project. In this way affective commitment towards the 'local' foci of commitment (project, lead project manager, organisation, client organisation) may not have an effect on radical creative work behaviour, since these parties do not expect this types of behaviour. In addition, employees may chose not to upset their local environment with radical creative ideas if they feel strong affective bonds with this environment.

In understanding what is the 'target' of radical creative behaviours, previous research indicates the underlying motivations of routine and incremental creative work behaviours to be an extrinsic motivation, whereas radical creativity is based on intrinsic motivation. This different underlying motivation is expected to interfere with the proximity effect of the matched level of analysis of the project. Radical creative behaviour may be not so much

aimed at the project, rather this type of behaviour is expected to be more externally focussed, aimed at changing and provoking the norms of fields transcending the local field of the project. Radical creative behaviour expressed in the field of the project is not expected to be motivated by the project, and neither aimed directly at the project.

With radical creative work behaviour found to be evoked by intrinsic motivation (Madjar et al., 2011), it is more likely that radical creative work behaviour is aimed at personal and self-centred entities such as the job, the career and the profession, rather than group-focused foci such as the project, the organisation and the client organisation. This is confirmed by empirical studies in which it is found the motivation of highly successful artists is to create the freedom to make creative choices on an individual basis, not always able to fit the blueprint or wider framework in relation to teams and the organisation (Moeran, 2009).

Radical creative behaviours are likely to be aimed at the wider professional field or domain (Amabile, 1996; Csikszentmihalyi, 1988), in such that affective commitment to the profession is expected to be a driver of suggesting radical new ideas and changes to the professional domain. For example, Hunt et al. (2004) stress that is the passion for one's subject and the love for the job that seems to be the driver of creativity. Commitment to the job or job involvement has been related to the satisfaction of intrinsic needs (Lawler and Hall, 1970), in such that job involvement is a function of intrinsic job factors, such as autonomy and responsibility, rather than extrinsic job factors such as pay. In addition to job involvement and commitment to the profession, commitment to the career has been found to be a main driver of radical creativity (Madjar et al., 2011). An example of this can be found in the performance of ballet dancers, who showed a strong intrinsic motivation and interest in their personal improvement and career opportunities, rather than in the success of the theatre or the dance ensemble enabling their career success (Scapolan and Montanari, 2010).

This leads to the following hypothesis:

Hypothesis 3:

Affective commitment will affect radical creative work behaviours in the following way:

3a. Affective commitment to the profession will positively affect radical creative work behaviour on the project.

3b. Affective commitment to the job will positively affect radical creative work behaviour on the project.

3c. Affective commitment to the career will positively affect radical creative work behaviour on the project.

Table 2.4 provides an overview of the hypothesized relations, including the basis of field theory, the foci of commitment, the underlying motivation and the type of creative work behaviour.

Table 2.4 Overview of the hypothesized relations direct effects

<i>Hyp.</i>	<i>Field theory</i>	<i>Foci of commitment</i>	<i>Motivation</i>	<i>Creative Work Behavior</i>
1	Project is most proximal to routine behaviour, following the principle of matched level of analysis	Project Lead project Manager	Extrinsic	Routine behaviour
2	Project is facilitating the incremental creative process other foci of commitment are sources of information	Project Lead Project Manager Profession Organisation Client	Extrinsic	Incremental CWB
3	Radical creativity is targetted to make contributions to the wider professional field, the local project environment is a 'channel' through which the project participant speaks to a wider audience	Career Job Profession	Intrinsic	Radical CWB

Table 2.4

2.3.3 Approach 2: Key-Mediation model

Within the series of studies using a variable-centred approach, there has been a focus on mediation between the foci of commitment. One model receiving attention in particular is the idea of a key-mediation model in which one foci of commitment mediates in predicting a specific type of behaviour. The basis of these models lies in field theory and the principle of matched level of analysis in the commitment attitude – behaviour relationship (Bentein, et al., 2002, Vandenberghe, Bentein, and Stinglhamber, 2004), in which the focus of commitment has an effect on behavioural outcomes specific to that focus. The idea of organisational commitment as a mediator is referred to as the 'key mediating construct' theory of employee commitment (Boshoff, 2000).

In accordance with this remark, a more distinct development is made by Bentein, Stinglhamber and Vandenberghe (2002), who connect the key mediating construct with field

theory (Lewin, 1943) more closely. In accordance with the concept of psychological proximity (Lewin, 1943) psychologically proximal factors are more prominent in their influence on individual behaviour. The assumption that employee behaviour is most strongly affected by commitment to the organisation is contested, since also other environments within the organisations may be perceived as more proximal and salient and have, therefore, a stronger effect on the individual's behaviour. .

In the empirical studies testing this key-mediation effect Hunt and Morgan hypothesize mediation effects between the foci of commitment (1994), which are in line with the results of Becker (1992). Comparing a direct effect model with the model including organisational commitment as a key mediating construct, the second model showed consistently better fit indices and therefore is a better representation of the relationships among the variables (Hunt and Morgan, 1994). With this finding Hunt and Morgan (1994) reconceptualise organisational commitment from 'one of the foci of commitment' to the 'global commitment to an organisation, consisting of various more specific constituencies', such as the work group, supervisor, and top management. Figure 2.1 shows the Hunt and Morgan's (1994) model with commitment to the organisation as the key mediating variable.

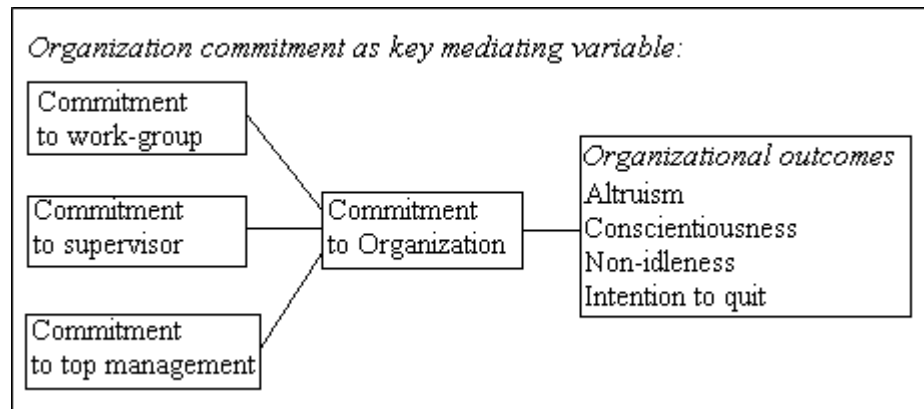


Figure 2.1 Key-mediation model organisation Hunt and Morgan (1994).

The 'key mediating construct theory' is confirmed by Redman and Snape (2005) however some significant remarks are made. Commitment to the organisation seems to be a mediator variable, only when the outcome variable is related to the organisation. In line with field theory, they find in case the outcomes are more cognitively distant from the organisation, or more foci specific, the mediation effect of organisation commitment becomes insignificant (Redman and Snape, 2005).

In accordance with field theory, Bentein et al. (2002) found their model with the work group as key mediating variable (Figure 2.2) to fit the data better than Hunt and Morgan's (1994) model with organisational commitment as key mediating variable.

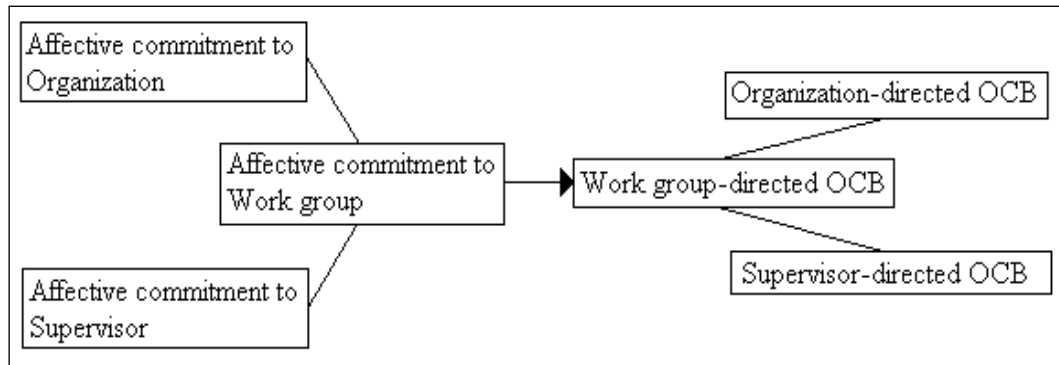


Figure 2.2 Key-mediation model work group Bentein et al. (2002).

Follow up studies found more empirical support for the combination model including the ‘key mediation construct’ and the ‘most proximal field’, with different foci of commitment to be the key mediator variable. Bentein et al. (2002) found the work group or team is the most proximal field in work environments, whereas in Vandenberghe, Bentein and Stinglhamber (2004) the organisation to be the key mediating variable. Boshoff (2000) shows the impact of commitment to the profession to be the most influential on intentions to resign. This indicates that the ‘key mediating construct’ varies with the proximity of this foci experienced by the employee and the type of behaviour that is aimed to be predicted.

Following from the development of field theory in the context of IIPs in the previous section, the project and the lead project manager are expected to be the most proximal field in relation to (routine) behaviour in the project. Commitment to any of the other foci (organisation, career, client, job, profession, and supervisor) may affect and strengthen commitment to the project in predicting behaviour related to the project. Following the conceptual framework developed in the previous section, for routine behaviour it is expected to be predicted by a key-mediation of commitment to the project. In other words, commitment to the other six foci of commitment are expected to affect the level of commitment to the project in predicting the levels of routine behaviour in the project.

Hypothesis 4:

Commitment to the project mediates the effect of commitment to the other foci of commitment (organisation, career, client, job, profession, and supervisor) in their effect on routine behaviour

Following the same line or argumentation as for the direct effect model developed in the previous section, more parties are expected to be involved in incremental creative behaviour. Incremental creative behaviour is expected to be targeted at the project as well as at parties beyond the boundaries of the project. Because of its centrality in the environment of IIPs, the project is expected to be the key-mediator in the relations between other foci of commitment and incremental creative behaviour.

Additionally, commitment to the profession, the organisation, the client, and the lead project manager are expected to have an effect on incremental creative work behaviour (Hypothesis 3). However, in the key-mediation model this effect is indirect, it is mediated by commitment to the project. This is the case because interaction between a diversity of fields is recognised to be key in engagement in incremental behaviours, however, the project is still the focal and most proximal field in the expression of this type of behaviour, facilitating the creative process.

Therefore, it is hypothesized:

Hypothesis 5:

Commitment to the project mediates the effect of commitment to the other foci of commitment (organisation, client, profession, and supervisor) in their effect on incremental creative work behaviour

Following from the previous section radical creative work behaviour are expected to be influenced most strongly by commitment to the job, the career and the profession. The underlying argumentation is that radical creative work behaviour are aimed at changing the wider field motivated by self-interest. The foci least restricted by boundaries of any sort and most strongly related to self-interested and intrinsic motivation is commitment to the job. Job involvement is a function of intrinsic job factors, such as autonomy and responsibility. Commitment to the client, the career and the profession all are expected to influence radical creative work behaviour (Hypothesis 4), however, this influence is expected to take place through increasing levels of commitment to the job.

Hypothesis 6:

Commitment to the project mediates the effect of commitment to the other foci of commitment (organisation, career, client, job, profession, and supervisor) in its effect on radical creative work behaviour

2.3.4 Approach 3: Profiles

This section first provides an overview of how research has used a person-centred approach to the study of commitment, in which typologies are created (Morin et al., 2011a) grouping individuals into unique and distinct commitment profiles, for which the relations with behavioural outcomes may differ (Magnusson, 1998). Following this brief introduction, the literature is examined on which profiles of commitment may be expected to exist in IIPs. In the last part of this section commitment profiles are related to creative work behaviours on the basis of field theory.

Gouldner (1958) was the first to identify typologies of employees based on their ‘local’ or ‘cosmopolitan’ latent profile based on loyalty to the organisation and commitment to the profession. Only few have used the person-centred approach creating profiles on the basis of targets of commitment (e.g., Morin et al., 2011a, Swailes, 2004), on the types of commitment (e.g., Meyer, Stanley, and Parfyonova, 2012; Kam, Morin, Meyer, Topolnysky, in press) and on both types and targets of commitment (Tsoumbris and Xenikou, 2010).

If networked work settings increase the strength and multiplicity of commitments, the synergistic effect between those commitments will be underestimated by a variable-centred test of the independent effects. Indeed, variable-centred analyses of interactive effects will typically include a reduced number of all possible two-way interactions, possibly completely misrepresenting the underlying typologies of employees’ profiles across multiple dimensions of commitment. For this reason, a typical variable-centred approach may likely result in model misspecifications and underestimation of interaction effects (Morin et al., 2010a), which are typically all taken into account within a person-centred perspective which analyses relations based on typologies of persons and how they vary within these typologies, rather than an oversimplified synthesis of some possible variable-centred interactions.

Remarkably, in the first attempt to examine changes in the nature, size and composition of commitment profiles within and across time, the results revealed an important level of temporal stability, with over 90% of the employees remaining in the same profiles over a 8 month period, even in the context of ongoing organisational changes (Kam et al., in press). Their results clearly support the heuristic value of these profiles on which to base managerial

decisions, suggesting that profiles may be much more stable than the levels of specific components of commitment separately.

The variable-centred approach is the dominant approach in the analysis of multiple targets of commitment. On the other hand, the person-centred approach in forming commitment profiles is emerging as a promising direction for future research (Meyer, Stanley, and Vandenberg, 2012). Contributions have been made separately. However, recently it has been argued that juxtaposing the two approaches provides unique insight of complex relations of this kind (Marsh et al., 2009). By juxtaposing the direct and mediation model with the results from a person-centred approach, this study follows this recommendation, in aiming to provide a complete insight into the relations between the multiple foci of commitment and creative work behaviour in IIPs.

2.3.3.1 Commitment profiles in inter-organisational innovation projects

A total of eleven empirical studies and one review paper (Meyer, Stanley, and Vandenberg, 2012) have been focusing on the combined effect of various foci of commitment using a person-centred approach. Six studies have focussed on profiles of multiple foci of commitment, four studies have focussed on profiling on the basis of the types of commitment and one study has included both foci and types of commitment. Recognizing interesting contributions that have been made recently on profiles including the *types* of commitment (Somers, 2010, Meyer et al., 2012, Stanley et al., 2013, Kam et al., in press), this review will focus on profiles based on the multiple *foci* of commitment.

In the early contribution of Gouldner (1958), the distinction is made between ‘Cosmopolitans’ and ‘Locals’, two groups of latent roles based on loyalty to the organisation, commitment to professional skills and values, and reference group orientations. Gouldner (1958) describes ‘Cosmopolitans’ to consist of two groups of employees, labelled as ‘the outsiders’ and ‘the empire builders’. The two groups of cosmopolitans are employees who tend to commit to the ‘higher organisational levels’, such as their profession or specialized professional groups and outer reference groups. Additionally, cosmopolitans show less loyalty to the organisation itself, as this entity does not provide enough career opportunities to them, and in reaction to that they are inclined to increase the autonomy of their professional department. Unfortunately, cross organisational boundary opportunities for commitment are not yet recognised by Gouldner (1958).

‘Locals’ consist of four groups of employees, labelled as ‘the dedicated’, ‘the true bureaucrat’, ‘the home guard’ and ‘the elders’. These four groups of ‘locals’ represent

employees who commit to intra organisational and 'lower' commitments such as the organisation, local community, subgroups and informal peer group. Locals are less committed to their profession and seem to be less occupational specialized. The two groups represent conflicting commitment types; it is suggested by Gouldner (1958) that these two identities may reflect tension between the organisation's simultaneous need for both loyalty and expertise.

Since Gouldner's first attempt to identify typologies of employees based on their 'local' or 'cosmopolitan' commitment profiles, very few studies have empirically assessed profiles of multiple foci of commitment. Goulder's (1958) categorizations are empirically tested by Bennis et al. (1958) and did not seem to fit a sample of nurses in the outpatient department of a hospital. The study found that additional classification categories were necessary, based on the multiple reference groups with whom nurses identify. These findings suggest that individuals identify with and become committed to multiple groups within and beyond the organisational boundaries.

Commitment profiles are developed grouping on the basis of various foci of commitment. Career commitment and organisational commitment where the basis of four profiles in a study by Carson et al. (1999), on medical librarians, namely (1) 'dually committed', (2) 'careerists', (3) 'organisationists', and (4) 'uncommitted'.

Becker and Billings published their first study on profiles of multiple foci of commitment in (1993). In accordance with Gouldner's work, they found four commitment profiles: (1) 'globally committed', high commitment to top management and the organisation, and low commitment to the supervisor and the work group, (2) 'highly committed', high commitment to supervisor, workgroup, top management and the organisation, (3) the 'uncommitted' low commitment to all four foci, and (4) the 'locally committed', high commitment to supervisor and work group and low commitment to top management and the organisation.

Swales study (2004) followed more advance approaches in allowing for different sets of profiles in different samples. This study found four profiles for public accountants: (1) 'high commitment' to organisation, supervisor, top management and work group (2) 'uncommitted' low commitment to all four (3) 'locally committed' high commitment to the work group and the supervisor and below average commitment to the organisation and top management (4) 'globally committed' high commitment to organisation, but below average commitment to the work team, top management and supervisor.

Tsoumbris and Xenikou (2010) are the first to combine the clustering on multiple foci of commitment with the different types. They found four commitment profiles (1) highly committed both 3-types and organisation and occupation, (2) affective normative dominant for both organisation and occupation (3) continuance dominant for both organisation and occupation and (4) non-committed.

Morin et al. (2011) is the first to assess commitment profiles using Latent Profile analysis and relating the profiles to employee behaviour using Latent Mixture Modelling. Latent Profiles analysis finds five commitment profiles on the basis of affective commitment to the organisation, supervisor, customers, job, career advancement, and work in general. The five profiles are (1) 'moderately committed', medium levels of commitment toward a majority of foci, (2) 'career committed', high commitment mostly toward their careers (careerists), (3) local-proximal profile or 'workplace committed' (high commitment to the organisation, workgroup, and customers) (4) 'low commitment' low levels of commitment toward a majority of foci, (5) 'highly committed' high levels of commitment toward a majority of foci.

Following recent commitment research applying the person-centred approach (Morin et al., 2011) an explorative approach is deemed suitable in the determination of commitment profiles in the specific context of IIPs. In essence the person-centred approach is an explorative approach, since it includes allowing the Latent Profile technique to explore representative classes of respondents in the data. Nevertheless, from the literature some expectations will be derived of profiles to exist in the context of IIPs.

In the IIP context the multiple foci of commitment include commitment to the organisation, the project, the lead project manager, the career, the job, the profession and the client. Based on previous empirical findings it is expected to find the following profiles in the IIP context, ordered from most distal to most proximal to behaviour in inter-organisational innovation projects.

- (1) the '*Uncommitted*' a low level of commitment to any of the foci,
- (2) the '*Organisationists*', only commitment to the organisation,
- (3) the '*Locally committed*', commitment to the organisation, the project manager and the project,
- (4) the '*Globally committed*', high levels of commitment to the profession, the career, and the job
- (5) the '*Highly committed*' to all seven foci of commitment, also labelled the '*Synergists*'
- (6) the '*Career committed*', only high commitment to the career only,

Table 2.5 presents an overview of the commitment profiles found in empirical studies.

Table 2.5 Overview of the multiple foci of commitment profiles

<i>Study</i>	<i>Profile</i>	Or	Ma	Su	Pr	Ca	Pr	WGPe	Cu	Jo	Wo
Gouldner (1958)	Cosmopolitan										
	Local										
Bennis et al (1958)											
Carson et al (1999)	Dually committed	H				H					
	Careerists	L				H					
	Organisationists	H				L					
	Uncommitted	L				L					
Becker & Billing (1993)	Globally committed	H	H	L				L			
	Highly committed	H	H	H				H			
	Uncommitted	L	L	L				L			
	Locally committed	L	L	H				H			
Swales (2004)	High committed	H	H	H				H			
	Uncommitted	L	L	L				L			
	Locally committed	L	L	H				H			
	Globally committed	H	L	L				L			
Tsoumbri & Xenikou (2010)	High committed	ANC				ANC					
	Aff.-Norm	AN				AN					
	Continuance	C				C					
	Non-committed	L				L					
Morin et al. (2011)	Moderately Committed	M		M		M			M	M	M
	Career committed	L		L		H			L	L	L
	Workplace committed	H		L		L			H	L	H
	Low commitment	L		L		L			L	L	L
	Highly committed	H		H		H			H	H	H

Or = organisation, Ma = top management, Su = supervisor, Pr = Profession or Occupation, Ca = Career, Pr = intra-organisational project team, WG = work group, Pe = peer group, Cu = customer or client, Jo = job, and Wo = commitment to work in general, ANC = Affective, Normative and Continuance commitment, AN=Affective and Normative commitment, C=Continuance commitment

Table 2.5

2.3.3.2 Commitment profiles and creative work behaviour

Previous research on multiple targets of commitments indicates that the separate targets often combine to influence behaviour (Klein, Becker, and Meyer, 2009). Traditionally, employees developed a relationship with one organisational context; this organisation was the single entity motivating employee's behaviour. In the work settings of inter-organisational innovation projects, multiple foci of commitment have a multitude of motivational effects on employees. How commitments together influence creative types of creative behaviour has not been empirically assessed. However there are two ideas theoretical based ideas of how the effects between commitment profiles and creative work behaviour may exist in IIPs.

From the creativity, innovation and knowledge literature some expectations can be developed on how commitment profiles affects creative work behaviour. Inter-business relations in Professional Service Firms (PSFs), have been found to provide access to new knowledge (Fosstenløkken, Løwendahl, and Revang, 2003), internationalization and learning (Reihlen and Apel, 2007), value creating processes (Løwendahl, Revang, and Fosstenløkken, 2001) and organisational learning (Swart and Kinnie, 2010). In other words, interaction with multiple parties in the work setting may be seen as providing resources enabling engagement in the creative process (Hsu, Wang, and Tzeng, 2007; Tushman and Scanlan, 1981).

From this we may expect employees with commitment to a single target to express less creative behaviour because of a lack of resources in comparison to employees interacting and committing to multiple targets. Commitment to multiple targets would lead to more and more diverse knowledge and would, therefore, lead to more creative ideas. The larger the diversity of fields an employee commits to, the larger the variety of ideas and knowledge, the higher the levels of radical creative work behaviour.

A second theory indicated that commitment to multiple targets may be related to role ambiguity and role conflict caused by multiple sets of expectations. Reichers (1986) identified two types of conflicts between commitments (i) intra-physic or intrapersonal conflict, where a person experiences internal conflict because they feel torn between divergent interests (Beech, 2011) and (ii) psycho-social conflict when there is competition between two parties to which the focal person shows commitment (Reichers, 1986: 509). Clearly, multiple commitments increase the chances of experiencing such conflict. In the literature on workplace conflicts (De Dreu and West 2001) these two forms of conflict, when resolved properly, are known to increase levels of team creativity by increasing levels of information sharing, re-evaluation of the status quo, and the identification of new solutions to previously unsolvable problems (e.g., Shalley and Gilson, 2004).

In contrast, too much conflict may overload employees, increase frustration, diminish trust, and this makes it harder to reach coherent solutions (De Dreu, 2006). In fact, when the outcomes of creative team processes are modelled as a function of the level of conflict, results usually show the relation to be curvilinear (Farh, Lee, and Farh, 2010). However, the relationship may be even more complex and depend on the nature of the commitment targets, their number and the employee's position. Thus, when employees show commitment to some targets pursuing similar objectives, then the expected level of conflict, or rather challenges to come up with a way to satisfy these multiple commitments, is likely to remain moderate and

to lead to more creative solutions. Given the lower levels of expected conflict, the level of creativity required to solve them is likely to remain incremental.

Conversely, when employees are committed to multiple targets, or to some targets with drastically opposed objectives, then they are likely to experience more substantial levels of conflict and may prefer to “play it safe” by adopting more routine, rather than creative, behaviours. Lower levels of incremental creativity are thus expected in this context. However, when facing these greater adaptation challenges, incremental solutions would not be sufficient so that, when solutions are found, they are likely to be more radically creative solutions. Clearly, the ability to adopt, or suggest, radically creative solutions may be a function of the ability of the employees to span the boundaries between the parties in order to realistically propose integrative solutions.

In summary, we expect the relation between commitment and creativity to differ as a function of the specific profiles of multiple commitment of each individual employee. For instance, commitment to multiple targets is likely to be more beneficial in terms of incremental creativity than commitment to a single target, by providing employees not only with greater adaptation challenges, but also increased levels of resources, knowledge, and a richer perspective of their workplace.

However, the more diversity between the fields employees commit to, the greater the discrepancy between their objectives, the more likely it is that radical creativity will be observed. Thus, commitment to multiple targets may lead to higher levels of creative work behaviour, depending on how well employees find synergies and new combinations between expectations from the multiple parties allowing employees to benefit from the multiple resources made available through these multiple commitments. If employees are able to synergize knowledge from multiple parties, new combinations of commitment may develop supporting creative processes. The latent profiles based on levels of commitment are modelled and tested in chapter six.

Chapter 3

Research methodology

In the first part of this chapter, the positivistic epistemological approach underlying the research is outlined. Based on this approach, the chosen method: a survey study is introduced. In the second part of the chapter the research setting is described. The survey is conducted in inter-organisational innovation projects, which are coordinated by the Technology Strategy Board. The design and sample of the study are described and this section provides demographics and a description of the data collected. The chapter concludes with a description of the ethical considerations, the storage of the data and actions undertaken to ensure confidentiality and anonymity of the respondents.

3.1 Research philosophy

From the previous sections a research question is posed and hypotheses are developed. This section will describe the research philosophy and methodological approaches to the proposed study of the relationships between commitment and creativity. To form the basis of a research plan, a research model needs to be aligned with a philosophical position. In the following section the research philosophy, ontology, epistemology, and methodology will be described. In this, the framework developed by Hassard (1991) presented in Table 3.1a will be followed.

Table 3.1a Objectivist versus subjectivist approach

The objectivist approach		The subjectivist approach
Realism	<i>Ontology</i>	Nominalism
Positivism	<i>Epistemology</i>	Anti-positivism
Determinism (structure)	<i>Human Nature</i>	Voluntarism (agency)
Nomothetic	<i>Methodology</i>	Idiographic

Adapted from Hassard (1991: 276)

Table 3.1a

3.1.1 Ontology, epistemology and methodology

In management, a positivistic epistemological position has achieved some dominance; nevertheless as argued by Johnson and Duberly (2000) management is not in any sense a unified field. The dominance of positivism has led to researchers taking a positivistic epistemological rationale and assumptions for granted. The dominance of positivistic assumptions is indicated by Kolakowski (1972) in that just because researchers are not calling themselves ‘positivist’ does not mean that they are not adopting positivist assumptions. Inherent assumptions and limitations of the positivistic epistemology should be made explicit to avoid misinterpretation.

Positivism is described by Bryman (2007) as an epistemological position that aims to apply the methods of the natural sciences to all social sciences. These methods of the natural sciences are seen as the only rational source of knowledge. Validity, reliability and operationalization are important concepts in positivistic studies (Johnson and Duberley, 2000). Definitions and descriptions of positivism seem to vary between authors. In general in a positivistic epistemology, the observer is assumed to be independent of the phenomena under study as the researcher is neutral and independent.

Table 3.1b provides an overview of the relations between ontologies and epistemologies, and how they are vertically integrated. Ontology, or the theory of existence, is described as ‘The grounds of knowledge’ (Hassard 1991: 276). Mostly, researchers follow assumptions and ideas about how to conduct research and these are consistent with the methodology and instruments in their studies. For example, realism shares two features with positivism, they both include the natural and social sciences should apply the same methods, and they both assume there is an external reality that may be independently observed by researchers. Positivists often apply the methods of the natural science (or aim to approach these), by applying a deductive approach in developing hypotheses, and confirm or falsify these by observing reality. In this way ontology, epistemology and methodology are logically related to each other.

In management, various research approaches are applied. Because of the closeness of management studies to the practice of management, studies in the field are influenced by pragmatic and eclectic thinking. Next to that, management studies draw upon findings grounded in different fields such as sociology, anthropology, psychology, statistics and even mathematics (Easterby Smith et al., 1992).

Pfeffer (1995) suggested that one way of overcoming the fragmentation in management research is applying a more standardized, positivist approach. The planned research aims to contribute to creativity literature. It is argued in thesis that, based on the literature review, creativity studies includes a variety of descriptions and approaches. Therefore, it may be concluded that fragmentation seems to be a problem in creativity literature, as the field is described as far from unified.

In addition to that, a more positivistic approach towards this study is in line with the work of Amabile (1988, 1997; 1996; 1982) and Zhang and Bartol (2010a; 2010b), which form the basis for this study. The creativity studies follow mainly a positivistic approach, partly due to the development of creativity literature based in psychology. In line with creativity, commitment studies in general, and specifically studies on multiple foci of commitment, may be characterized as empirical, systematic and deductive.

This study will follow a positivist epistemology, assuming reality is objectively given, functionally necessary and politically neutral (Willmott, 1992; 1997). Literature is identified in an objective and systematic way, and the hypotheses are developed independent of the researcher's views and preferences. The relationships between theory and research may be described to be deductive, rather than inductive, as hypotheses are derived from theory are tested against observations of the real world. Following the outlined methodology, this study proposes to follow objective criteria to determine which studies provide the basis of the relation between commitment and creativity.

Table 3.1b Ontology and epistemology Adapted from Easterby-Smith, Thorp and Jackson (2008)

<i>Ontology</i>	Realism	Internal Realism	Relativism	Nominalism
	Single truth	Truth is obscure	Many truths	No truth exists
	Facts exist to be revealed	Facts exist but are hard to uncover	Facts depend on view of the observer	Facts are all created
<i>Epistemology</i>	POSITIVISM	Positivism	Constructionism	CONSTRUCTIONISM
<i>Aims</i>	Discovery	Exposure	Convergence	Invention
<i>Starting points</i>	Hypotheses	Propositions	Questions	Critique
<i>Designs</i>	Experiments	Large surveys	Cases and small surveys	Engagement
<i>Data types</i>	Numbers and data	Numbers and words	Words and numbers	Words: experiences Sense marking
<i>Analysis</i>	Verification /Falsification	Correlation	Triangulation	Understanding
<i>Outcomes</i>	Confirm theories	Test and generate theories	Theory generation	Insights and actions

Table 3.1b

3.1.2 Research design, methods and analytical strategy

In line with the research philosophy, the proposed methodology for this study is nomothetic (large sample, generalization) rather than idiographic (case based, descriptive). By drawing on a relatively large sample, this study aims to provide a more general outlook on the quantitative relations between commitment and creativity. By measuring the commitments and creativity of a relative large sample of employees' experience, this study aims to find generalized relations between the two constructs.

The level of analysis of this study is the individual. This is in line with the primary interest of this study, which is the relation between the commitment attitudes and the individual enactment of the creative process. In commitment studies, commitment is regularly measured as an individual attitude (Allen and Meyer, 1997). Also in previous studies creativity is conceptualised as the individual enactment in the creative process (Zhang and Bartol, 2010). The individual level of analysis is deemed to be suitable for the study of creativity as it is argued that creativity viewed as the continuous effort of the individual, who develops, carries, reacts to, and modifies ideas (Van de Ven, 1986).

The instrument that would fit the research methodology and the individual level of analysis is a survey study. Advantage of a survey study is that a survey study is relatively low time consuming, and a potentially larger group of employees of multiple organisational may fill in the survey. This increases the chance that the population is represented well, increasing validity. A survey is the only method that may describe the characteristics of large population. The high level of standardization increases reliability of the instrument, all respondents fill in the same survey independent of the supplier of the survey. Surveys also enable inter group comparison, which applies to the current study to compare creative process enactment for the different profiles of commitment.

Another argument for the choice of a survey study is that for both commitment and creativity reliable and validated survey measures exist. This advantage enables the current study to use the survey instrument, and measure creativity and commitment benefitting from a potential larger sample, increasing the chance of statistically significant results. Even though survey measures are expected to be reliable, problems can occur. A pilot study will identify the existence of sample specific measurement problems.

A disadvantage of the survey method is that errors may be caused by nonresponse; respondents who decide not to participate in the survey will not be represented, which may cause a limit representation and validity of the study. In addition,

surveys only allow for close ended questions and, therefore, underlying motivations and explanations may not become clear from a survey study. Interviews with respondents may provide more space for respondents to express underlying reason and developments in the relations between commitment and creativity. For example, this may provide insight into the interaction between commitments specifically the conflict between commitments.

Another limitation of survey questionnaires are the potential problems with self-report questions and common method bias. The choice of measuring creative work behaviour through a self-report survey measure is deliberate rather than a convenience decision. The reason for self-report style of survey questions is that the individual is the only one to be able to rate to what extent he or she has been engaged in creative work behaviours. Supervisor ratings would provide only limited insight into this intrinsic process.

As highlighted in the previous section, Creative Work Behaviour measures the engagement in the creative process in which behaviours related to different stages may take place infrequent and nonsequential. The measure of this concept in the context of inter-organisational innovation projects provides the opportunity to measure behaviour related to the creative process in a cross-sectional research design.

A limitation of this design is that a cross-sectional study will not be able to measure causal relations. This study will not be able to analyse if commitment to a specific set of foci will lead to more or less creativity, with employees being committed first leading to creative process enactment subsequently. When constructs are measured at one point in time, they can only be associated, and it may only be assumed the attitudes measured have caused the employees to enact the creative process. A design that would be able to overcome this limitation would be an experimental design, including the repeated measurement after treatment and a control group. For the reasons outlined above this type of design is less feasible and applicable to the nature of this study.

3.2 Research setting

The context of this study, inter-organisational innovation projects (IIPs), is central to the hypothesised relations under study. In this section the research setting is described, the design is outlined and the sampling procedure is explained. This section concludes with a description of the data and demographics of the participants.

3.2.1 The sample

Innovation projects include multiple parties crossing organisational boundaries, and are seen as a viable type of organising work to stimulate creativity and innovation. Therefore IIPs are often found to be eligible for governmental funding, likewise in the United Kingdom IIPs can find (co) funding from a variety of funding bodies. To gain access to a large number of IIPs research collaboration was established with the Technology Strategy Board. The Technology Strategy Board is the innovation agency of the United Kingdom and aims to accelerate economic growth by stimulating and supporting business-led innovation.

It is the vision of the Technology Strategy Board for the United Kingdom to be a global leader in innovation and a magnet for innovative businesses which can apply technology rapidly, effectively and sustainably to create wealth and enhance quality of life. The Technology Strategy Board has a number of strategies to stimulate innovation. They (1) offer funding to de-risk development of tomorrow's innovative products and services, (2) help business understand future markets and the innovation opportunities created by the challenges of today, (3) bring together partners to maximise foundering for innovation and get groups of organisations working together. Also, they (4) run competitions for Research and Development (R&D) funding in priority areas, (5) break down barriers to innovations, for example through large-scale demonstrators for new ideas and products, (6) support in connecting the innovation landscape so that business, government and research work together can provide companies the right help at the right time.

Five key commitments of the Technology Strategy Board in the 2011 to 2015 time slot are as follows: (1) Catapults are a newly established network of catapult centres, which are world-leading centres of innovation designed to accelerate commercialisation in specific areas. (2) New support for high potential SMEs to support helping at early stages to bring ideas more rapidly to the market. (3) To scale up the work across governments to make public sector procurement a force for innovation. (4) A further investment in large-scale demonstrators will bring partners together to validate what can be done to overcome the barriers to broad application of new products and services. (5) New forms of knowledge

exchange will be stimulated by the connect online platforms as a place where individuals and businesses can find partners, build collaborations and work on challenges on the journey to commercialisation.

The Technology Strategy Board used a broad set of tools to support business innovation. The types of innovation programs the TSB uses include SMART, ABRI, Collaborative Research and Development (CR&D), _Connect, Knowledge Transfer Partnerships, Knowledge Transfer Networks, Biomedical Catalyst, Launchpad, Catapult, Eurostarts, Innovation Vouchers, Innovation and Knowledge Centres and Missions. The four types of projects included in our sample are outlined below.

Collaborative Research and Development (CR&D) projects

This type of project aims to help companies to work collaboratively to create new products and services. The collaborative R&D program co-funds innovative projects which involve partnerships between businesses and between business and academia. Funding for this type of project is awarded through open, themed, and multiple stage competitions. Collaborative R&D projects are expected to last between 12 and 36 months and total costs will typically range from £250,000 to £3 million. For these industrial research projects, micro business and SMEs can expect to be 60% funded with large companies at 50%. Each project must include at least two partners.

Smart

Smart is a grant scheme which offers funding to small and medium-sized enterprises (SMEs) to engage in R&D projects in the strategically important areas of science, engineering and technology, from which successful new products, processes and services could emerge. The scheme supports SMEs carrying out research and development which offers potentially significant rewards and that could stimulate economic growth in the United Kingdom.

Smart bridges the funding gap faced by many small and early stage companies wanting to assess potential markets, progress ideas and invest in R&D. It is open for applications at any time and the process is single staged. There are three types of smart funding; (1) proof of market, up to nine months with coverage of 60% of the project costs (maximum of £25,000), (2) proof of concept, up to 18 months, with coverage of 60% of the project costs (maximum of £100,000), and (3) development of prototype, up to two years, with 35% coverage of costs for medium-sized enterprises and 45% for smaller enterprises (maximum of £250,000).

Fast-track

By ‘fast-tracking’ some of the most promising ideas towards full commercialisation, the competition will help to maintain the UK’s reputation as a global leader in some of the scientific and technology areas. This will in turn open up for further opportunities for innovative business to develop and exploit this technology further.

The fast-track projects are expected to last 6–12 months and could account for up to 10% of the total competition budget. These industrial research projects will typically attract 60% funding for micro businesses and SMEs, with large companies eligible for 50% funding. The fast-track projects are collaborative and led by a business, and include a small or micro business. Each project must include at least two partners.

Feasibility study

These feasibility and demonstration projects must be undertaken by a consortium of at least two partners. One of these can be an academic institution but the project must be led by a business, which can be of any size. Projects are expected to last six to 18 months and can attract public funding of up to 75%, with a maximum grant of £100k for an individual project.

3.2.2 Data collection

For this study we have negotiated access to IIPs of the four different kinds presented above because these together represent a relatively homogeneous group of inter-organisational innovation projects. Despite the differences in nature, all programs include projects with multiple partners, all projects are between six and 36 months, all projects have to apply for funding with TSB and are awarded partial funding for the project.

The survey was distributed using a survey website, which was created using Qualtrics software. Participants were given the opportunity to follow a link which opened a secured web browser in which answers to the questions could be provided. The IT manager of the Technology Strategy Board has been contacting all parties involved in the four types of projects. E-mail requests to participate in the survey were sent by e-mail in the last week of May 2012. Since response rates were insufficient after the first mailing, a second series of e-mails were sent to the same recipients in the second week of July 2012.

Table 3.2a provides information on the size of the population, the sample response and response rates. These figures indicate the sample is a fair representation of the population

of project participants, with a slightly larger proportion of SMART projects and under-representation of fast-track projects.

Table 3.2a Population, sample and response rate per program

<i>Program</i>	<i>Population</i>	<i>% of population</i>	<i>Sample</i>	<i>% of sample</i>	<i>Response rate</i>
Fast-track	109	4.8	15	3.3	13.8
Collaborative R&D	1644	72.1	301	66.9	18.3
SMART	361	15.8	105	23.3	29.1
Feasibility	165	7.2	29	6.4	17.6
Total / average	2279	100	450	100	19.7

Table 3.2a

3.2.3 Description of the sample

The sample was tested for distortion between demographics to avoid bias. Cross tabulation with chi-square tests and ANOVA with Post Hoc. Tests (Tamhane) were conducted to test for relations between demographical groups. In the following section the demographics are presented. In case differences between groups are presented these results are based on a statistical significance of α is below .05.

The median age category of the project participants in our sample is between 46 and 50 years old, 23.8% of the sample is female and 14% works part-time. The participants are relatively highly educated with 31.6% indicated to have a PhD or equivalent qualification, 28.4% to have a Master's degree, and a total of 60.5 % to have a university degree (Bachelor, Masters and PhD).

There are some indications of a gender bias in the sample. The already small sample of women (23.8%) is more likely to work part-time, in a lower grade in their organisation and is less likely to be an engineer. The women have on average a lower level of education and are in a lower age category. Consequently to the age they have worked less long in their occupation (men 16.4 years, women 12.8 years) and have worked less long for their client (men 5.0 years women 3.3 years). On the project women are more likely to work in a large team and in specific roles. Table 3.2b presents the frequencies of participants split up by project team role and gender. The gender differences are significant different from a normal distribution, meaning that there are significant more female financial administrators and significantly less female Lead Project Managers.

Table 3.2b Participants: gender and project team role

	<i>Male</i>	<i>Female</i>	<i>Total</i>
Lead Project Manager	133	27	160
Participant Project Manager	83	19	102
Financial Administrator	19	21	40
Project Participant	62	14	76
Total	297	81	378

*Table 3.2b**Organisation*

The participants hold a relatively high position in their organisation, with 50% being either a partner or director, and 71.3% being either partner, director, senior manager or manager. On the other hand, this may be a biased representation as 30.2% of the respondents preferred not to answer this question about seniority in your organisation. On average participants have been working for their organisation for 6.2 years.

Occupation

The sample represents project participants in a wide variety of sectors, which can be represented by the four largest groups (1) Engineers 20.7%, (2) Managers 17.8% (including founder, owner, CEO, chairman or director of the company) (2) Scientists 10.2% (including and (4) Consultants 7.1%. A total of 30.2% preferred not to answer this question, the remaining 14% includes a wide variety of professional groups such as administrators, arts, architecture, health services, skilled trade occupations, and personal service occupations. There is no relation between the program type and the occupational sectors, in other words the sectors are equally represented within the program types. On average the participants have been working in their profession for twelve years. A total of 59.1% of the sample is a member of a professional body.

Project

The sample includes participants holding a variety of roles in the project. The frequencies and percentage of roles in the project are displayed in table 3.2c. In SMART and Fast-track projects there are proportionally more Lead Project Managers that have participated in the survey. In the CR&D and Feasibility projects there is a more equal spread over the project team roles including more participant project managers, financial administrators and project participants.

Table 3.2c Role in the project, frequency and percentage

<i>Role in the project</i>	<i>Frequency</i>	<i>Percent</i>
Lead Project Manager	161	35.8
Participant Project Manager	102	22.7
Finacial Administrator	40	8.9
Project Participant	76	16.9
Did not disclose	71	15.8
Total	450	100

Table 3.2c

The project teams include on average 7.5 team members, however the SMART, Feasibility, and Fast-track project team are smaller (average 4.6, 4.8 and 5.5) than the and Collaborative R&D projects (average 8.9). The total length of the projects varies between six months and five years, however the average total length of the projects is dependent on the program type. The Fast-track, SMART and feasibility projects run on average for one year, the Collaborative R&D projects take on average 3 years. At the time of the survey on average the projects have been completed for 60.9%, with the SMART projects on average in an earlier stage of completion (average 54.3%) and the feasibility studies at a later stage of completion (average 79.4%).

On average the participants in the survey have been working on the project for 1.4 years. In the SMART projects the participants have been working for their organisation on average shorter (5.4 years) than on the other program types. In 14.2% of the projects the client is part of the project and on average participants have been working for the client for four years. In CR&D projects the client is much more often part of the project (50%) than is the case for SMART, Fast-track and Feasibility projects (on average 25%).

3.2.4 Ethical considerations

The proposed research project includes human research objects; participants will be asked to fill in an online survey. The research has adhered to the guidelines as set down by the British Psychological Society for conducting research with human participants. Data collected in this study has remained anonymous and was not shared outside the context of this research. It has been kept confidentially within the confines of the survey tool. The management of the researched organisations, the Technology Strategy Board, and governmental bodies have had limited access to the data which has removed the risk of individual participants being

identified. The researchers have been unable to identify individual respondents. As such, it is deemed that there has been, and will not be increased risk to the participants outside of the normal data retention policies typically held.

All data are collected and stored in accordance with the Data Protection Act (1998). There has been no attempt to induce physical or psychological harm, or to reduce a participant's values and dignity. All data provided have been done so optionally and participants have not been obliged to disclose any information they did not wish to. There have been no explicit individual benefits for participating in the survey, though possible benefits may have arisen to the individual as a result of the salience of the topic investigated. At all times throughout the study, including after survey completion, respondents have been provided the right to withdraw from the study. All data relevant to these respondents would have been removed from analyses without consequence or judgment. Although no harm was foreseen to participants, should respondents have felt distressed or become otherwise affected by this survey, we did offer our contact details and have been available to answer any questions or queries respondents may have had.

Storage of the (digital) data has been in accordance with the Data Protection Act (1998). Bath University Computing Systems (BUCS) has stored the research data on a resilient dedicated file store. This has provided the researcher with an extra security of "Snapshots" of the data set, which are taken during the day, and held for ten days. Data has been backed up to tape on a nightly basis and held for 90 days. Disks and tapes are mounted in separate server rooms. Consequently, material accidentally deleted can be restored by Research staff themselves for up to ten days, and via a request to BUCS within 3 months of data deletion.

After five years, two copies of the data will be removed from disc, archived onto tape, and stored in two geographically separate sites to reduce the chance of loss through fire or flood. Recovery will be possible in between one and three working days (depending on age). This archived data will remain available until fifteen years after the data collection has been complete, at which point it will be deleted. The organisations involved did not gain access to the raw data. The data has been anonymous, and presented in a way that the organisations involved will have not been able to identify individual participants or projects. There are no reports of ethical issues that have arisen during the data collection, and any further ethical issues in the dissemination of results are unlikely to arise.

The ethical considerations outlined above have been discussed before data collection by the researcher with a second reader outside the research project and with the Head of

Research, Prof Russ Vince, at the School of Management, University of Bath. The signed template was passed on to the Departmental Research Ethics Officer who has reviewed issues for action and inclusion in the Departmental Annual Report. No significant issues arose during this assessment.

The research has been designed to comply with the ethical guidelines of the School of Management, University of Bath. Furthermore, the research adheres to the guidelines as set by the British Psychological Society (BPS) for conducting research with human participants. These guidelines may be found in the Code of Ethics and Conduct published by the Ethics Committee of the BPS¹. In designing this research and in recruiting participants several ethical considerations were made in the communication towards participants. All participants were ensured full confidentiality and anonymity throughout the research process and participants were only recruited on a voluntary basis. The text used informing participants of the ethical issues which may have arisen from participation in the study was included at the first page of the online survey. This text is displayed in appendix 3.1.

¹ Code of Ethics and Conduct, published 23rd of September 2009 by the British Psychological Society. Available on: http://www.bps.org.uk/the-society/code-of-conduct/code-of-conduct_home.cfm

Chapter 4

Methods and tools

This chapter focusses on the development of the survey instruments measuring creative work behaviour and the multiple foci of commitment in IPPs. A two-step approach is followed in modelling the data (Bollen, 1998; Byrne, 2010). This includes a separate test of the measurement model in the current chapter, followed by a test of the structural model in chapter five and six.

An overview is provided of studies measuring creativity in the workplace. On the basis of the review of the literature and conceptual development in chapter two, the selected measure will be extended and tested. The process of measurement development includes (1) interviews with employees of a creative advertising organisation, (2) a pilot study in the creative sector of architecture, and (3) exploratory and confirmatory factor analysis and the data from IPPs. The extension of the measure include (1) the fourth stage of the creative process, and (2) the addition of a radical type of creative work behaviour. These two extensions are developed in separate sections, both following the same validation process, including the interviews, the pilot study, and the test of construct reliability of the final items in the IPP context.

The second part of this chapter focusses on the measure of commitment to seven foci, representing the contemporary work setting of inter-organisational projects. This measure is based on existing and empirically validated measures, yet this measure is tested on its reliability in our sample of employees in IPPs.

The third part of this chapter includes an extensive the test for the bias that may be caused due to the use of common methods, including a series of tests to identify and control for this potential bias. The chapter concludes with an overview and test of control variables on both creative work behaviour and commitment to multiple foci. This provides an introduction to the next chapter in which the hypotheses are tested and the results of the analysis are reported.

4.1 Measurement of creative work behaviour

Already early in the development of creativity literature, methodological difficulties are indicated by Guilford (1950). Because of a lack of stereotype patterns or any general recognised standards of creativity, creative abilities are long thought to be only measurable

by the completion of a psychometric test similar to IQ tests. On the other hand, creativity tests have been developed based on subjective creativity judgements (Amabile, 1996), in the form of supervisors' ratings of employees' creativity. Similarly, subjective judgements have been applied to rate the recognition of creativity in a product, a process or a person, however this method has been questioned as a possible dependent variable (Koslow, Sasser, and Riordan, 2003).

The first attempt to measure the individual enactment of the creative process is developed by Zhang and Bartol (2010a; 2010b). As stated before, creative process engagement is defined as employee involvement or engagement in creativity relevant cognitive processes, including (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation (Amabile, 1983; Reiter-Palmon and Illies, 2004 ; Zhang and Bartol, 2010a). This concept is based on Amabile's (1983) componential conceptualization of creativity, referring to the importance of intrinsic motivation in the process towards creative outcomes. The importance of the individual engagement or efforts towards the creative process has been stressed in Amabile's previous work (Amabile, 1988; Amabile, 1996; Amabile, et al., 1996).

The development by Zhang and Bartol (2010a; 2010b) has contributed to the study of the creative process by including three phases of the creative process; problem identification, information searching and idea generation. Following this recent suggested promising direction for creativity research, the current work will focus on the measurement and study of the creative process (Mumford, 2000; Shalley, et al., 2004), by measuring creativity as the individual behaviour central in the creative process.

The description of the enactment of the individual in the creative process as presented above is based on an underlying assumption. This is that enactment the creative process is likely to lead to a creative outcome which may be recognised by the domain. By including both concepts in their empirical study, Zhang and Bartol (2010a) have confirmed that when the employee who explores new cognitive pathways and is playful with ideas (Amabile et al., 1996), is recognised as creative by his or her supervisor. However, the creative behaviour is not that same as the recognition by the supervisor, rather these are two distinct concepts. This idea seems to be a great complementation to the more traditional way of measuring creativity, and provides opportunities for providing insight in the creative process. As noted before, the majority of creativity studies focus on the outcome of creativity, in which something or someone is creative as it is recognised by the public or by specialists.

The idea behind this concept is that when an employee enacts the activities associated with the creative process, (e.g., searching for problems, information and solutions), it is more likely a creative product is produced (Zhang and Bartol, 2010a). More in detail, when somebody attempts to find the (underlying) problem in a work situation, makes an effort to gather information related to the problem, and generates ideas to improve the situation, then the creative process is enacted.

This measure of creative process engagement is developed in this study to measure Creative Work Behaviour, and will provide insight in the role of the individual in the creative process. Zhang and Bartol (2010 a, 2010b) have developed their 11-item measure of creative process enactment drawing on Amabile (1983), Perry-Smith (2006), and Reiter-Palmon and Illies (2004). The items in the scale were reviewed by six creativity experts, and measure the behaviour related to three dimensions of the creative process, (1) problem identification, (2) information searching and encoding, and (3) idea generation. The items loaded on their intended dimensions with Cronbach's Alpha's of .77, .77 and .81. The fit of the measurement model was confirmed by testing the difference in fit between of the three factor model to a two factor model (difference in χ^2 93.42, $p < .001$, model fit CFI .97, GFI .96, SRMR .04, RMSEA .06).

Following the literature review, presented in section 2.2 of chapter two, the measure of creative work behaviour will be developed into two directions, progressing the phases of the creative process and advancing into two types of creative work behaviour. The development of the measure follows on from the section in chapter two and is based on the following steps (1) analysis of interviews at a creative advertising agency, (2) a pilot test of the measure with architecture students, (3) an extensive test of reliability of the scale using the data collected from participants in IIPs.

4.1.1 Development of the fourth phase of CWB

Developed in chapter two is the theoretical need for the inclusion of behaviour in the fourth stage of the creative process in the concept of creative work behaviour. This stage includes behaviour that takes place after the generation of ideas. Table 2.1 on page 40 represents keywords and descriptions of a fourth evaluation stage, derived from the literature. This is the basis from which the creative work behaviour in this particular stage of the creative process is explored in interviews.

(1) Interviews at a creative advertising agency

A list of creative industries has been released by the UK's Work foundation. In their most recent report¹, the 'creative industries' include advertising, architecture, art and antiques, computer games, crafts, design, designer fashion, film and video, music, performing arts, publishing, software, television and radio². This designation of creative industries was developed by the UK Department of Culture, Media and Sport, and is named the DCMS 13. This grouping joins the 'arts' and the 'cultural' sectors together with a range of professional services sectors such as advertising, architecture and software (O'Connor, 2007).

In creative industries, human capital is an important creative resource, because it can generate knowledge and innovation (Lazzeretti, Boix, and Capone, 2008). Creative industries may represent the general management of people stimulating to be creative (Boltanski and Chiapello, 2005) and in changing employment structures (Cappelli, 2008). The indication that work takes place increasingly beyond the boundaries of the organisation has to be taken into account also in other industries, as employees interact with clients and various other contacts within and beyond their profession. The creative industries provide therefore a suitable arena for the development of the measure of creative work behaviour, both for the development of the measure of behaviour related to the fourth phase as well as the development of the measure of the types of creative work behaviour.

A series of twelve interviews with employees in a medium sized London based advertising agency have been informing the items developed to represent the fourth 'evaluation' stage of the creative process. More information on the interviewees can be found in appendix 3.1, including the function of the employee and the date of the interview. The interviews were transcribed and analysed. Two themes were identified which are, (1) restarting / re-iterating the creative process, as well as (2) the evaluation of the quality and value of the idea.

Table 4.1a includes two example quotes from the interviews representing the two themes relevant to the behaviour in the fourth phase of the creative process. The two themes were then represented by two survey items developed from the interviews. These are 'I went over an idea, over and over, until I was sure it was the best idea I would come up with', and 'I made sure only the best work would leave my hands'.

¹ A Creative Block? The Future of the UK Creative Industries, A Knowledge Economy and Creative Industries report. Benjamin Reid, Alexandra Albert and Laurence Hopkins, December 2010. London, UK.

² DCMS (2001), Creative Industries Mapping Document 2001 (2 ed.), London, UK: Department of Culture, Media and Sport, http://www.culture.gov.uk/reference_library/publications/4632.aspx

Table 4.1a Example quotes from the interviews on the fourth phase

<i>Resp.</i>	<i>Description of the 'fourth' phase of the creative process</i>
B.	<p>'So you kind of go, you get the briefing, the tissue is where you share a few first some the first strategic thoughts</p> <p>(...)</p> <p>Then you might show a first round of work, which is a bit more full blown developed and has a bit more color to it</p> <p>Then you might do a second round, where you have taken on the feedback from the first where you kind of have refined it</p> <p>So it becomes more tangible and executable, then the campaign is life, that campaign has got to going on, you are monitoring it</p> <p>And you then have to build in enough flexibility in that campaign to refine it again basically</p> <p>So you probably got, you get, I suppose</p> <p>So that is a kind of process I suppose of refinement as well from there to there, that is where a bit lot of refinement is or evolution and see how people are interact with it and then uhm, yeah because you never know how people are going to interact with it really do you know what I mean?'</p>
D.	<p>So I have a saying here which I tell everybody which is the pitch starts after the presentation</p> <p><i>Interviewer: How do you mean?</i></p> <p>Well what I mean is everyone goes: AaaandTHERE you are! and the client goes: thanks very much, and then you get: Have they called? have they called? Have they called?</p> <p>As opposed to going, so look, we have done this what do you think? interesting? Not interesting? Fine ok look We've done those little groups there what do you think?</p> <p>Fine look, so is that interesting? Yeah ok look, we think we can kind of evolves it and then we go BOOM, and then I go right ok so how are you feeling? What do you think? Oh, we can't get back to you, well look if there is anything you are worried about or thinking about just ask us because anything is possible! And they go: well actually, you know that bit there, does that really work? Or have you thought about these behaviours? We will come back to you in about two days time and so on</p> <p><i>Interviewer: So in other words the dialog, the iterative nature of the process.. continuous all the way trough between yourself and the client is right at the very start of the process...</i></p> <p>Sometimes the client says we really can't it is not fair! and we say, what do you mean it is not fair? We want to work the how work. We want to pitch in the way we want to work out how our relationship with you will work. Do you see what I mean?</p>

Table 4.1a

Two more items were selected to measure creative work behaviour in the fourth stage of the creative process in the pilot study. These two items are based on previous measures of creative and innovative work behaviour (Zhang and Bartol, 2010a, 2010b, Janssen, 2007). From the measure of innovative work behaviour one item was adapted from Janssen (2007), 'I promoted and championed my ideas to others'. The Zhang and Barol measure one item was copied into the measure of the fourth phase as it seems to fit the idea of the fourth 'evaluation' stage and the , the item was 'I generated a significant number of alternatives to the same problem before I chose the final solution'. The list of items developed and included in the pilot study and the factor loadings are included in appendix 3.3

(2) Pilot test reliability measure

The items representing the fourth phase of the creative process have been pilot tested by students from the architecture department, which is also listed as a creative industry¹. Data was collected from 62 students currently enrolled in undergraduate and postgraduate architecture programs of the University of Bath. Students who had completed at least one placement have been approached in order to test the validity of the questions, specifically the questions referring to working with clients.

The statistical software Mplus package version 7 has been used to test the reliability and dimensionality of the creative work behaviour scales. First an exploratory factor analysis has been used to determine the existence of the fourth factor, representing the fourth phase of the creative process. Second, a confirmatory factor analysis has been conducted to confirm the factor structure and to make decisions about the quality and replacement of the items. Overall model adequacy was evaluated on the basis of the χ^2 statistic and three other fit indices: the comparative fit index (CFI, Bentler, 1990), the Tucker-Lewis index (TLI; Tucker and Lewis, 1973), and the Root Mean Square Error of Approximation (RMSEA; Brown and Cudeck, 1993). A model is regarded to have an acceptable fit if the CFI and TLI exceeds .90 (Byrne, 2001; Byrne, 2012), and the RMSEA is less than .08 (Brown and Cudeck, 1993; Hu and Bentler, 1998). However, these criteria are guidelines. If models are compared and show an improvement in fit, a CFI value of .85 is acceptable (Bollen, 1998). These criteria are applied to all of the models tested in this study.

¹DCMS (2001), Creative Industries Mapping Document 2001 (2 ed.), London, UK: Department of Culture, Media and Sport, http://www.culture.gov.uk/reference_library/publications/4632.aspx

An exploratory factor analysis with Geomin rotation was performed and showed a three factor model to provide insufficient fit to the data ($\chi^2 = 92.41$ (52), CFI = .91, TLI = .84, and RMSEA = .12). The addition of a fourth factor improved the fit to an acceptable level ($\chi^2 = 59.68$ (41), CFI = 0.96, TLI = .91, and RMSEA = .09). However, when the loadings of the items were assessed on which factors they are related to, the items did not show the expected pattern. The newly developed items load very strongly on the items of the second and third phase.

The confirmatory factor analysis showed an insufficient fit of the proposed model with the data ($\chi^2 = 130.58$ (71), CFI = .86, TLI = .83, and RMSEA = .12). The factor loading of the items loading on the fourth phase were lower than for the items of the other phases. The latent construct of the fourth phase was highly related with phase two and three. All indicators point at an improvement that should be made to increase the coherence of the items and to increase the distinction between the items of the fourth phase and the other items.

A re-evaluation of the items and development of new items seemed appropriate after the pilot test. The set of items as a whole seemed inappropriately representative of one underlying concept. This is an indication that the evaluation of the literature revealed promotion and championing to be a part of the innovation process rather than the creative process. The item corresponding to this was therefore removed from the scale.

After the test of the measure and the conclusion of insufficient reliability of the items the interviews were the basis of further development and readjustment of the measure. The interviews informed the development of two more items representing the two themes that came forward from the interviews, (1) restarting the process, as well as (2) quality and value evaluation. The new items are ‘I will think of new ideas if I feel the idea is not good enough’, and ‘I assess the new idea on its added value’. The items were then reviewed by a representative group of academic researchers specialized in creativity. The list of items developed and included in the final study of employees of IPPs and the factor loadings are included in appendix 3.4.

(3) Reliability test of the CWB measure

The Mplus package version 7 has been used to test the reliability and dimensionality of the creative work behaviour scales in the IPP context. First an exploratory factor analysis has been used to determine the existence of the fourth factor, representing the fourth phase of the creative process. Second, a confirmatory factor analysis has been conducted to confirm the factor structure and to make decisions on the inclusion and exclusion of items.

Exploratory factor analysis original construct

An exploratory factor analysis is used to determine if the items representing the fourth stage of the creative process is representing a fourth underlying latent construct. In case the items representing the evaluation stage are loading too strongly on the creative work behaviour in the other phases, this would be an indication that the fourth stage is not an independent and different type of creative behaviour. The exploratory factor analysis with Geomin rotation shows an insufficient fit with three factors ($\chi^2 = 365.20$ (63), CFI = .87, TLI = .79, and RMSEA = .12). Meaning, three factors are not sufficient to represent the variance in the data. A fourth factor is needed to represent the variance of the newly developed items for the fourth stage of the creative process. A four factor structure shows to fit the data sufficiently ($\chi^2 = 2488.95$ (105), CFI = .95, TLI = .90, and RMSEA = .08). A five factor structure shows again an improvement of the fit ($\chi^2 = 2488.95$ (105), CFI = .98, TLI = .96, and RMSEA = .06). This five factor structure indicates that there are potentially two underlying factors in the five items representing the fourth phase of the creative process.

Confirmatory factor analysis

A confirmatory factor analysis was conducted (1) to compare the fit of the newly developed fourth phase with the original measure, (2) to make decisions on the inclusion of the best representing items measuring the fourth phase, and (3) to decide if the newly developed construct should be approached as a two-factor model or not.

(1) The original measure of CPE was developed by Zhang and Bartol (2010a, 2010b) and includes an 11-item measure of creative process enactment drawing on Amabile (1983), Perry-Smith (2006), and Reiter-Palmon and Illies (2004). In their 2010 study, the items loaded on their intended dimensions with Cronbach's Alpha's of .77, .77 and .81. The fit of the measurement model was confirmed by the significant difference in fit between of the three factor model to a two factor model (difference in χ^2 93.42, $p < .001$). The final model including the 11 items showed a sufficient fit (CFI .97, GFI .96, SRMR .04, RMSEA .06).

However, when this original 11-item measure was fit our data, it showed an insufficient fit ($\chi^2 = 162.77$ (41), CFI = .93, TLI = .90, and RMSEA = .10). The items from this measure are included in appendix 3.4. In addition, item number nine has a low loading on the third factor in comparison with the other items (Standardized Beta Coefficient of .52, other loadings vary between .55 and .88, median .81). This item is 'I generate a significant number of alternatives to the same problem before I choose the final solution'. This item does not load very well on the other items representing the third phase, and this may be seen as an

indication that fit would be improved by including this item to represent the fourth phase of the creative process engagement.

(2) When this particular item is added to the other four developed items, and all items are included in a confirmatory factor analysis, the fit is acceptable ($\chi^2 = 293.62$ (84), CFI = .92, TLI = .89, and RMSEA = .09). To improve the fit, the newly developed items were excluded one by one, and improvement of fit was compared. Item 2 ‘I will go over an idea repeatedly, until I am sure it is the best idea we will come up with’, showed the lowest contribution in fit, and a high correlation with item 1 ‘I generate a significant number of alternatives to the same problem before I choose the final solution’. The measure excluding item 2 showed a sufficient fit ($\chi^2 = 221.25$ (71), CFI = .93, TLI = .91, and RMSEA = .08).

(3) The original Zhang and Bartol measure (2010a, 2010b) the three types of creative process engagement are together represented in a second-order factor representing CPE as an overall latent construct. It is impossible to compare the model with and without a second-order factor on improvement in fit as these two models are statistically equivalent. However, for the model with four factors we have tested for a second-order factor. The model including and overall latent construct predicted by the behaviour in the four phases of the creative process showed a similar sufficient fit ($\chi^2 = 223.77$ (73), CFI = .93, TLI = .91, and RMSEA = .08). The complex model with the second-order factor, does not explain significantly more variance in the data ($\Delta\chi^2 = 2.52$, Δdf 2, $p = .28$). In case no significant improvement in fit is made, a simpler model is always to be preferred over a complex model. The addition of a second-order factor in the measure is not significantly increasing the fit therefore, this element is excluded from the model.

(4) To evaluate the psychometric properties of the measures, the validity and reliability of all the multi-item scales of incremental CWB is analysed. Specifically, item reliability, convergent validity and discriminant validity (Fornell and Larcker, 1981) are assessed. The composite reliability of all constructs is comfortably above the threshold value of 0.60. Convergent validity is assessed on the basis of Cronbach’s alpha and the significance of the factor loadings (Shah and Goldstein, 2006). Discriminant validity of the constructs is assessed on the basis of the average variance extracted (AVE) for each measurement scale. The value for each construct should equal or exceed 0.50 (Fornell and Larcker, 1981). As presented in Table 4.1b, the ICWB scales exceed the recommended thresholds for each of the tests, indicating that the constructs have good reliability and convergent and discriminant validity.

Table 4.1b Confirmatory Factor Analysis ICWB

Scales and associated indicators	Standardized factor loadings
Phase 1: Problem identification	
(Cronbach's α = .78 ; CR = .64; AVE = .58)	
I spend considerable time trying to understand the nature of the problems I face	0.71
I think about the problem from multiple perspectives	0.89
I decompose a difficult problem / assignment into parts to obtain greater understanding	0.64
Phase 2: Information gathering	
(Cronbach's α = .78 ; CR = .79; AVE = .57)	
I consult a wide variety of information	0.85
I search for information from multiple sources (e.g., personal memories, other's experience, documentation, Internet)	0.90
I retain large amounts of detailed information in my area of expertise for future use	0.55
Phase 3: Idea generation	
(Cronbach's α = .85 ; CR = .87; AVE = .62)	
I consider diverse sources of information in generating new ideas	0.83
I look for connections with solutions used in seeming diverse areas	0.85
I try to devise potential solutions that move away from established ways of doing things	0.74
I spend considerable time shifting through information that helps to generate new ideas	0.66
Phase 4: Idea evaluation	
(Cronbach's α = .82 ; CR = .90; AVE = .69)	
I generate a significant number of alternatives to the same problem before I choose the final solution	0.62
I make sure only the best ideas are taken forward	0.67
I will think of new ideas if I feel the idea is not good enough	0.81
I assess the new idea on its added value	0.85

Table 4.1b

To conclude, the new measure of CWB including creative process engagement in four phases of the creative process is found to be a reliable measure. The items represent four underlying latent construct representing the four phases of the creative process. This measure showed a better fit to the data than the original measure developed by Zhang and Bartol (2010a, 2010b). Additionally, we found four related but independent constructs, which are representing the phases separately rather than in a second-order factor structure. Therefore, in the analysis the four phases are allowed to correlated, however they are treated and predicted as independent constructs.

4.1.2 Development types of CWB

From chapter two it has become clear that there is a need for the theoretical and empirical distinction between incremental and radical types of creative work behaviour. Table 2.2 on page 41 provides an overview of the descriptions and conceptualisations of incremental, radical and routine types of behaviour. Gilson and Madjar (2001) have indicated the conceptual distinction between radical and incremental creativity to be two separate forms of creative performance. Following this, two separate sets of measurements of creative work behaviour will be developed for incremental and radical creative work behaviour.

(1) Interviews at advertising agency

For the development of the radical version of the CWB measure the same series of interviews with creatives in a medium sized London based advertising agency have been informing the items developed to represent this construct. Table 4.1c shows some example quotes collected from the ten interviews describing the radical type of creative process behaviour. The quotes from the interview were collected describing radical creative process and related with behaviour and informed the wording of the items of the radical creative work behaviour scale. The list of items developed and included in the final study of employees of IPPs and the factor loadings are included in appendix 3.4.

(2) Pilot test reliability measure

The same data was from 62 students currently enrolled in the architecture program was used to provide an indication of the reliability of the measure. An exploratory factor analysis with Geomin rotation was performed and showed a three factor model to provide sufficient fit to the data ($\chi^2 = 71.77$ (52), CFI = .97, TLI = .95, and RMSEA = .08). The addition of a fourth factor to the model caused the model not to converge. When assessing the loadings of the items with the three factor solution, the items did show the expected pattern, with the idea generation and problem finding phases joining together in one factor.

Table 4.1c example quotes from the interviews on radical creativity

<i>Language describing radical creative processes</i>		
<u>Resp.</u>	<u>Qoutes from the respondents</u>	<u>Reflected in the items:</u>
B.	'there is no structure in place'(...) 'You can't physically hide, you cannot be hangover'	radically new ways for doing
G.	'So this is about creating a destination for the most inventive thinkers'	radically new ways for doing
A.	'We do not have any account managers here, we don't have an account management department at all'	radically new ways for doing
F.	'Which is the most challenging thing for me I have no process I have not structure'	radically new ways for doing
E.	'We have to continuously challenge them'	controversial, provoking
F.	'If that is the case when people sit down and go bring their style, I want to break that, because I want to push them beyond their talent, find out a different way of thinking'	controversial provoking
D.	'Here our collective focus is to produce wonderful things'	unexpected
F.	'I am looking for provocations all the time, I am probably bored'	provoking
C.	'working here it is almost like, they are addicted to a drug'	unconventional
H.	'It goes back to this kind of tensions between the challenges you face'	contradicting
C.	'develop their career, learning new stuff'	essential, extensive, far-reaching
I.	'I don't once I make a piece of work and see a success ratio set against that'	not afraid to take risks
D.	'for output that is amazingly interesting and provocative' 'interesting, noticed and not compromised'	striking, most original, extensive
F.	'The way I do that is to critique, challenge and evaluate'	challenge
J.	'creatives come up with something that was a bit crazy'	most original, unconventional
J.	'I wanted to be involved in that because I like new stuff'	most original

Table 4.1c

The confirmatory factor analysis showed marginally sufficient fit of the proposed model of the radical CWB measure with the data with CFI and TLI above the .90 threshold ($\chi^2 = 115.14$ (71), CFI = .93, TLI = .91, and RMSEA = .10). This fit is better than the fit of the data with the incremental CWB measure, ($\chi^2 = 130.58$ (71), CFI = .86, TLI = .83, and RMSEA = .12). The high value for the RMSEA may be caused by the relatively low sample size (N=62), which shows higher values in smaller samples (Tanaka, 1987). Also the analysis of the model did not show any modification indices, indicating a relatively accurate model. Test results provided no indication of a need to modify the measure of the radical type of creative work behaviour.

(3) Exploratory and confirmatory test radical CWB measure

Also for the radical CWB measure Mplus package version 7 has been used to test the reliability and dimensionality of the CWB scales. First an exploratory factor analysis has been used to determine the existence of the fourth stage of the creative process for radical CWB. Second, a confirmatory factor analysis has been conducted to confirm the factor structure and to make decisions on the inclusion and exclusion of items.

Exploratory factor analysis radical CWB

An exploratory factor analysis is used to determine if the items representing the fourth stage of the creative process for radical CWB. The exploratory factor analysis with Geomin rotation shows an acceptable fit with three factors ($\chi^2 = 181.61$ (52), CFI = .94, TLI = .90, and RMSEA = .09). However, a four-factor structure shows a considerably better fit the data ($\chi^2 = 89.46$ (41), CFI = .98, TLI = .95, and RMSEA = .06). A five factor structure did not converge, meaning there seems to be no more than four underlying factors underlying the data. This is an indication that radical CWB, likewise incremental CWB, consist of four types of behaviour related to the phases of the create process.

Confirmatory factor analysis radical CWB

A confirmatory factor analysis was conducted (1) to compare the fit of the measure including the newly developed fourth phase with the original measure, (2) to make decisions on the inclusion of the best representing items measuring radical CWB, and (3) to decide if the newly develop construct should be approached as a second-order factor model.

(1) When we structure the items of radical CWB according to the original 11-item measure of Zhang and Bartol, we find this model to fit the data sufficiently ($\chi^2 = 118.86$ (41),

CFI = .96, TLI = .94, and RMSEA = .08). On the other hand, similar to the incremental measure of CWB, item number nine has a very low loading on the third factor in comparison with the other items (Standardized Beta Coefficient of .047, other loadings vary between .72 and .85, median .81). This item is 'I generate a significant number of (sometimes contradicting) alternatives to the same problem before I choose the final solution'. The insufficient loading of this may be seen as an indication that fit would be improved by including this item representing the fourth phase of the creative work behaviour.

(2) When this particular item is added to the other four developed items, and all items are included in a confirmatory factor analysis, the fit is good ($\chi^2 = 155.392$ (71), CFI = .96, TLI = .95, and RMSEA = .06). To check if there are any improvements that can be made to the fit, the newly developed items were excluded one by one, and improvement of fit was compared. Excluding any of the items from the measure does not lead to an improvement of the overall fit. The items of the radical CWB measure and the final standardized factor loadings are presented in appendix 3.5.

(3) Also the radical version of the CWB measure is compared for a model with and without a second-order factor. The model including an overall latent construct predicted by the behaviour in the four phases of the radical creative process showed a sufficient fit ($\chi^2 = 171.00$ (73), CFI = .96, TLI = .95, and RMSEA = .07). A simpler model is always to be preferred over a complex model. However, in the case of radical CWB, including an overall second-order factor explains significantly more of the variance ($\Delta\chi^2 = 15.6$, df 2, $p < .001$). Therefore, in contrast to the incremental measure of creative work behaviour, radical creative work behaviour is represented better including an overarching second-order factor. This finding indicates the existence of an overall construct of radical creative work behaviour, whereas incremental creative work behaviour consists of four independent types of behaviour related to the four phases of the (incremental) creative process.

(4) To evaluate the psychometric properties of the measures, the validity and reliability of all the multi-item scales of incremental CWB is analysed. Specifically, item reliability, convergent validity and discriminant validity (Fornell and Larcker, 1981) are assessed. The composite reliability of all constructs is comfortably above the threshold value of 0.60. Convergent validity is assessed on the basis of Cronbach's alpha and the significance of the factor loadings (Shah and Goldstein, 2006). Discriminant validity of the constructs is assessed on the basis of the average variance extracted (AVE) for each measurement scale. The value for each construct should equal or exceed 0.50 (Fornell and Larcker, 1981). As presented in Table 4.1d, the ICWB scales exceed the recommended thresholds for each of the

tests, indicating that the constructs have good reliability and convergent and discriminant validity. The new developed measure of radical CWB is found to be a reliable measure.

Table 4.1d Confirmatory Factor Analysis RCWB

Scales and associated indicators	Standardized factor loadings
Phase 1: Problem identification	
(Cronbach's α = .81 ; CR = .87; AVE = .69)	
I provoke people to understand the different side of the nature of the problems we face	0.64
I think about the problem from radically different perspectives	0.85
I come up with unconventional ways to deal with difficult problems	0.81
Phase 2: Information gathering	
(Cronbach's α = .83 ; CR = .83; AVE = .62)	
I consult information that has seemingly nothing to do with the situation .73	0.73
I look for information which challenges the expertise in my field .81	0.81
I search for information from sources others would not recognize as a source .79	0.79
Phase 3: Idea generation	
(Cronbach's α = .88 ; CR = .87; AVE = .62)	
I suggest radically new ways for doing work in the project	0.81
I look for connections with solutions used in seeming controversial areas	0.83
I consider unexpected sources of information in generating new ideas	0.84
I spend considerable time provoking people's ideas to generate new idea	0.73
Phase 4: Idea evaluation	
(Cronbach's α = .80 ; CR = .89; AVE = .66)	
I evaluate ideas on whether these are essential, extensive, and far-reaching	0.62
I generate a large number of (sometimes contradicting) alternatives to the same problem before I choose the final solution	0.69
I am not afraid to take risks by doing work over if I believe we can create something more striking	0.75
I challenge myself to develop my most original ideas	0.76

Table 4.1d

An additional exploratory factor analysis is conducted including all items from routine behaviour, incremental and radical creative work behaviour in the four phases. This analysis is performed in order to test to what extend the items load on their respective construct. In other words, it is explored if the items represent the nine underlying concepts, including the four phases of incremental creative work behaviour, the four phases of radical creative work behaviour and one latent construct of routine behaviour. Routine behaviour was measured using four items that have been developed to measure in-role behaviour adapted from Van Dyne and LePine (1998). The items of this measure are included in appendix 3.5, convergent reliability is confirmed by chronbach's alpha of .94 of this scale.

All items of routine behaviour, incremental creative work behaviour and radical creative work behaviour are tested on underlying factors in an exploratory factor analysis. Expecting nine underlying factors, the model with eight factor showed a sufficient fit ($\chi^2 = 862.07$ (270), CFI = .92, TLI = .88, and RMSEA = .07). Additionally, the seven factor model, which showed the best fit with all items loading on their underlying foci of commitment ($\chi^2 = 521.53$ (246), CFI = .96, TLI = .93, and RMSEA = .05). The items of radical creative work behaviour in the third phase had a strong overlap in loadings with the items of incremental creative work behaviour in the third phase. Similarly, the items of radical creative work behaviour in the fourth phase showed high cross loading with incremental creative work behaviour in the fourth phase (idea evaluation). These cross loadings could be due to (1) the similar wording of the items, or (2) a stronger relations between the behaviour in the phases rather than relation between the types of creativity.

A confirmatory factor analysis was conducted to confirm the factor structure and the reliability of the overall measure. In the overall measure similar worded items were allowed to correlate (for example, the items of incremental creative work behaviour in the first phase with the corresponding items of radical creative work behaviour in the first phase). The CFA showed a sufficient fit of the overall model to the data ($\chi^2 = 1018.941$ (415), CFI = .91, TLI = .90, and RMSEA = .06). All final items of the incremental and radical CWB scales and the items of routine behaviour with their corresponding factor loadings are displayed in Appendix 3.5

Table 4.1e provides an overview of the correlations between the incremental CWB measure, the radical CWB measure and routine behaviour. From this overview it becomes clear that incremental creative work behaviour and routine behaviour share a strong relation, stronger than radical creative work behaviour with routine behaviour. The relation between routine behaviour is found to be stronger in the fourth phase (idea evaluation) of the process. The first and third phases of the creative process are less strongly related to routine behaviour. This is an indication that the first and third phase of the creative process are more 'radical' creative compared to the evaluation phase which is more routine based. The relation between the creativity constructs will be discussed in more detail in chapter five.

Table 4.1e Means, Standard Deviation, Correlations and Chronbach's Alpha's Routine, radical and incremental CWB

No	Variable	N	Mean	S.D.	1	2	3	4	5	6	7	8	9
1	Routine behaviour	392	4.98	0.69	.88#								
	<i>Incremental</i>												
2	CWB phase 1	321	5.40	0.98	.40**	.78							
3	CWB phase 2	320	5.84	0.86	.41**	.46**	.78						
4	CWB phase 3	314	5.22	0.96	.39**	.46**	.46**	.85					
5	CWB phase 4	314	5.36	0.92	.43**	.45**	.47**	.95**	.82				
	<i>Radical</i>												
6	CWB phase 1	321	5.01	1.03	.30**	.58**	.39**	.47**	.48**	.81			
7	CWB phase 2	319	4.68	1.18	.24**	.35**	.46**	.33**	.32**	.48**	.83		
8	CWB phase 3	318	4.71	1.15	.22**	.39**	.34**	.45**	.45**	.66**	.63**	.88	
9	CWB phase 4	317	5.16	0.97	.44**	.51**	.49**	.70**	.70**	.63**	.49**	.60**	0.80

Cronbach's alpha's are included on the diagonal, * correlation is significant at the .05 level (2-tailed), ** correlation is significant at the .01 level (2-tailed).

Table 4.1e

4.2 Measurement of the multiple foci of commitment

The measurement of commitment in organisations has a long tradition of developing reliable measures of the construct. In line with the conceptualisation and definition of commitment as an attitude (Solinger et al., 2008, Klein, Molloy, and Cooper, 2012) in chapter 2, commitment follows the established line of measures developed by previous research. From the three component conceptualization by Meyer and Allen (Allen and Meyer, 1990; Meyer and Allen, 1991) the affective component is adopted for this thesis.

The three-component measure of commitment, including affective, normative and continuance commitment, has been developed over a series of studies by Meyer and Allen (1990; 1991, 1997; 1990; 1993). Gelattly, Meyer and Luchak (2006) have analysed the three components of commitment resulting in profiles of commitment which related to various types of behaviour. They have developed a nine-item measure of the three component measure based on the three items with the highest loadings on their respective commitment factor adapted from Meyer, Allen and Smith (1993). In this measure the items are developed for the organisation and the profession separately. The affective component of commitment is represented as an attitude towards the respective focus of commitment, an example item of this measure is ‘My organisation has a great deal of personal meaning for me’.

The measurement of commitment to to the profession and the organisation is adapted to represent the multiple foci in the specific context of inter-organisational innovation projects. Since commitment has started to recognise the multiple foci of commitment in the organisational context, several scholars have developed survey measures to capture the concept of multiple foci of commitment. Examples are the extension of the three component model of commitment to five foci (Stinglhamber, Bentein, and Vandenberghe, 2002) and the Workplace Affective Commitment Multidimensional Questionnaire (WACMQ) (Madore, 2004; Morin et al., 2009).

The specific context of IPPs and the centrality of external foci of commitment in this context limits the extent to which these measures can be applied in this study. For example, commitment to the client in the IPP context is a different construct than commitment to customers, included in previously developed sets of commitment measures. Commitment to the client in the IPP context includes commitment to a client organisation. Therefore the measurement of commitment to the project, the organisation the profession and the client organisation are adapted from the Gelattly, Meyer and Luchak (2006) measure which is based on a long tradition of measurement of commitment towards organisations. Commitment to

the lead project manager is adapted from Stinglhamber et al., 2002, which is very similar to the Allen and Meyer measures of commitment.

Commitment to the career and commitment to the job are both captured as rather independent constructs. Commitment to the career is represented by a six-item measure of career orientation adapted from (Ellemers, de Gilder, and van den Heuvel, 1998). Job commitment is measured using the 11-item job involvement measure developed by Blau (1989). To test the reliability for the multiple foci of commitment, first an exploratory factor analysis has been used to determine the distinction between the seven foci of commitment. Second, a confirmatory factor analysis has been conducted to confirm the factor structure of the commitment measure. All items measuring commitment to multiple foci are adopted from previous developed measures and are included in Appendix 3.6.

Exploratory factor analysis radical CWB

An exploratory factor analysis is used to determine if the items represent the seven underlying foci of commitment. The model with six factors showed a sufficient fit ($\chi^2 = 862.074$ (270), CFI = .92, TLI = .88, and RMSEA = .07). In the six factor model the items of commitment to the project and commitment to the supervisor are loading on the same factor.

However the measurement model is confirmed by the seven factor model, which showed the best fit with all items loading on their underlying foci of commitment ($\chi^2 = 521.528$ (246), CFI = .96, TLI = .93, and RMSEA = .05). A model with eight factors split up the nine items of job involvement into two groups.

Confirmatory factor analysis radical CWB

A confirmatory factor analysis was conducted to confirm the factor structure and the reliability of the overall measure. In the overall measure similar worded items were allowed to correlate (items for commitment to the project and profession, and commitment to organisation and client). The CFA showed a sufficient fit of the overall model to the data ($\chi^2 = 817.304$ (371), CFI = .94, TLI = .93, and RMSEA = .05).

To evaluate the psychometric properties of the measures, the validity and reliability of all the multi-item scales of commitment are analysed. Specifically, item reliability, convergent validity and discriminant validity (Fornell and Larcker, 1981) are assessed. The composite reliability of all constructs is comfortably above the threshold value of 0.60. Convergent validity is assessed on the basis of Cronbach's alpha and the significance of the factor loadings (Shah and Goldstein, 2006). Discriminant validity of the constructs is

assessed on the basis of the average variance extracted (AVE) for each measurement scale. The value for each construct should equal or exceed 0.50 (Fornell and Larcker, 1981). As presented in Table 4.2.a, the commitment scales exceed the recommended thresholds for each of the tests, indicating that the constructs have good reliability and convergent and discriminant validity.

Means, correlations and measurement reliability for the separate measures are provided in Table 4.2b. The items of the commitment measure are included in Appendix 3.6.

Table 4.2a Confirmatory Factor Analysis

Scales and associated indicators	Standardized factor loadings
Commitment to the project	
(Cronbach's $\alpha = .90$; CR = .82; AVE = .82.)	
I do not regret having entered the innovation project	0.76
I like working in the innovation project	0.94
I am enthusiastic about the innovation project	0.93
Commitment to the organisation	
(Cronbach's $\alpha = .95$; CR = .89; AVE = .89)	
I feel like part of the family within my organisation	0.88
My organisation has a great deal of personal meaning for me	0.93
I feel a strong sense of belonging to my organisation	0.97
Commitment to the lead project manager	
(Cronbach's $\alpha = .80$; CR = .74; AVE = .71)	
I have respect for my project supervisor	0.99
I appreciate my project supervisor	0.93
I have little admiration for my project supervisor (R)	0.48
Commitment to the client organisation	
(Cronbach's $\alpha = .95$; CR = .88; AVE = .88)	
I feel like part of the family with this client	0.91
This client has a great deal of personal meaning for me	0.96
I feel a strong sense of belonging to this client	0.92
Commitment to the profession	
(Cronbach's $\alpha = .81$; CR = .79; AVE = .78)	
I do not regret having entered my profession	0.68
I like working in my profession	0.97
I am enthusiastic about my profession	0.91

Table 4.2a Confirmatory Factor Analysis (Continued)

Scales and associated indicators	Standardized factor loadings
Commitment to the career	
(Cronbach's $\alpha = .90$; CR = .69; AVE = .68)	
My career is one of the most important things in my life	0.80
I regularly consider what I could do to get ahead at work	0.75
The ambitions in my life mainly have to do with my career	0.85
My career plays a central role in my life	0.86
I think that I should have a successful career	0.68
I am prepared to do additional chores, when these benefit my career	0.64
Commitment to the job	
(Cronbach's $\alpha = .90$; CR = .66; AVE = .64)	
The most important things that happen in my life involve my job	0.69
My job is a small part of myself (R)	0.30
I am very personally involved in my job	0.56
I live, eat, and breathe my job	0.78
Most of my interests are centred around my job	0.82
I have very strong ties to my job	0.69
Most of my life goals are job-oriented	0.83
I consider my job as central to my existence	0.76
I like to be absorbed in my job	0.46

Table 4.2a

Table 4.2b Means, Standard Deviation, Correlations and Chronbach's Alpha's of the multiple foci of commitment

No	Variable	N	Mean	S.D.	1	2	3	4	5	6	7
	<i>Affective Commitment</i>										
1	Project	450	4.54	1.31	.90#						
2	Supervisor	176	5.73	1.27	-.04	.95					
3	Occupation	314	6.27	0.94	.17**	.08	.80				
4	Career	450	4.85	1.17	.95**	-.03	.21**	.95			
5	Job	450	4.41	1.18	.65**	-.06	.32**	.64**	.81		
6	Organization	314	5.70	1.41	.18**	.08	.34**	.17**	.43**	.90	
7	Client	142	4.18	1.54	.01	-.08	.07	.03	.15	.17*	.82

* Correlations is significant at the .05 level (2-tailed),

** Correlation is significant at the .01 level (2-tailed).

Table 4.2b

4.3 Common method variance

Organisational researchers have been troubled by a long-standing problem related to the use of self-report type survey questions. The relations between concepts measured by this type of questions may be biased by shared variance due to the measurement method. Causes of this common variance are related to the use of self-report type questions, and explained by Podsakoff and Organ to be caused by item similarity, respondents' consistency motive, momentary mood states, and social desirability (1986).

The type of questions used in the CWB measure is non-independently verifiable, due to the data being gathered concerning individual's intention to show a particular behaviour. Supervisors would not be able to identically describe or verify the intention and engagement in the creative process behaviour. In other words, the measurement of creativity in this particular way can only be conducted by self-report type questions due to the nature of the subject. There is no "direct means of cross-validating people's descriptions of their feeling or intentions" (Podsakoff and Todor, 1985: 533). In the current study the problems arise because both the dependent variables (commitment attitudes) and the independent variable (incremental and radical CWB) are measured by self-reports from the same respondent.

Recently, a series of alternative way of testing and controlling for common method variance in organisation studies is presented by William, Hartman and Cavazotte (2010). In this study we will use the marker variable technique developed by Lindell and Whitney (2001). The aim of this method is to find a construct that is theoretically unrelated to the independent variable. It is remarkably hard to find a construct that should not be related in any way to the construct of CWB as well as to commitment. After consultation with experts in the field of commitment, it was decided to include a variable that is most likely to be unrelated to creativity.

A measure of Corporate Social Responsibility (CSR) was use as the marker variable in this study. Four items created by Vitell and Davies (1990) were used to represent this construct that, theoretically, should not have any relation with commitment nor creativity (items are included in appendix 3.7). An example item of this CSR measure is 'The socially responsible manager must occasionally place the interest of society over the interest of the organisation'. This construct is chosen rather than a demographic characteristic, since this type of variables are less likely to share characteristics that are expected to produce CMV (such as social desirability) (Richarson et al., 2009).

To the knowledge of the authors, the relationship between CSR and creativity has not been empirically assessed. Yet, lately the dynamic capability approach has been proposed as

an instrument for enhancing competitive advantage as well as social responsible innovation in strategic management (Mahlouij and Anaraki, 2009). In their argument, CSR can affect social responsible innovation through managerial creativity, dynamic sustainability, cost effectiveness, and reputational approach. This is however, not a particularly strong argument to expect any theoretical relationship between CSR and creativity. To conclude, the marker CSR to use in creativity research may be perceived as an ideal marker (Richardson et al., 2009).

The marker variable CSR is expected to be unrelated to the other constructs in the study, however, a recent study by Brammer, Millington and Rayton has examined the relation between CSR and commitment to the organisation (Brammer, Millington, and Rayton, 2007). Drawing on social identity theory, they found employee perceptions of external corporate social responsibility to have a positive effect on effective commitment to the organisation ($r = .49$, $p < .001$, standardized regression coefficient = $.14$, $p < .001$). This external CSR was measured using a single item constructs on a five-point scale using the statement ‘The company is a socially responsible member of the community.’ This strong relationship found is not expected to this extend in the current study, since the items used in the current study do not refer to a specific organisation or entity, but to an overall attitude towards CSR. Unfortunately, we may not conclude our marker variable CSR to be completely theoretically unrelated to the variables in the current study, since a theoretical relation may be expected in the case of commitment to the organisation and CSR. Therefore, we have to conclude that the marker CSR in relation to commitment is a non-ideal marker variable.

Test

In this study, to identify the existence of Common Method Variance (CMV) we conduct a series of tests including (1) the Harman’s one-factor test (Kemery and Dunlap, 1986; Podsakoff and Todor, 1985), (2) the correlational Marker Technique (Lindell and Whitney, 2001), (3) the CFA marker technique, and (4) unmeasured latent method construct (Williams, Hartman and Cavazotte, 2010). In the final paragraph we control for CMV in the final models and describe the effects.

Harman’s one-factor test

As it is know that the likelihood of finding one underlying factor decreases with adding more items, we will test the CWB measure separately for incremental and radical behaviour, and add only two phases in the factor analysis. For the foci of commitment we will test for small

groups of commitment that are likely to group together (1) commitment to the project, the supervisor and the profession, (2) commitment to the organisation and the client (3) commitment to the job and the career. The items are included in an exploratory factor analysis and the one-factor model is compared with the original two-factor model (three-factor for commitment to the project, leader and profession). Table 4.3a shows that all two-factor models are presenting a significant better fit with the data than the one-factor models. This indicates that, according to the Harman's one-factor test, it is unlikely the data is biased due to common method variance.

Table 4.3a Comparison fit one-factor models versus original model

<i>Items included</i>	<i>Fit one-factor model</i>					<i>Fit original model</i>				
	X^2	DF	CFI	TLI	RMSEA	X^2	DF	CFI	TLI	RMSEA
ICWB phase 1-2	197	9	0.75	0.59	0.26	6	3	1.00	0.99	0.04
ICWB phase 3-4	162	20	0.88	0.83	0.15	17	13	1.00	0.99	0.03
RCWB phase 1-2	192	9	0.75	0.58	0.25	4	4	1.00	1.00	0.01
RCWB phase 3-4	300	20	0.75	0.66	0.21	26	13	0.99	0.98	0.06
Commitment proj., LPM, prof.	946	27	0.55	0.4	0.29	24	12	0.99	0.98	0.05
Commitment org & client	439	9	0.69	0.49	0.39	12	4	0.99	0.98	0.08
Commitment job & career	1113	90	0.75	0.71	0.16	184	63	0.97	0.95	0.07

Table 4.3a

The correlational marker technique

According to this technique a study can control for CMV by partialling out the shared variance associated with the marker variable (Lindell and Whitney, 2001). The best estimate of CMV, according to this method, is the smallest observed positive correlation between the marker variable and one of the substantive variables. This technique assumes CMV to be noncongeneric, in other words, the effect of CMV is assumed to be equal across all variables in the study. Table 4.3b shows the correlations between the marker variable and the substantive variables in the study.

Table 4.3b Correlational market technique

No	Variable	N	Mean	S.D.	1
1	Marker variable CSR	310	5.19	1.07	1
<i>Creativity</i>					
2	ICWB phase 1	323	5.40	0.98	0.08
3	ICWB phase 2	322	5.84	0.86	0.1
4	ICWB phase 3	316	5.22	0.96	.13*
5	ICWB phase 4	316	5.36	0.92	.12*
6	RCWB phase 1	323	5.01	1.03	0.08
7	RCWB phase 2	321	4.68	1.18	.12*
8	RCWB phase 3	320	4.71	1.15	0.11
9	RCWB phase 4	319	5.16	0.97	0.09
10	Routine Behaviour	392	4.98	0.69	0.11
<i>Commitment</i>					
11	Project	395	5.94	1.16	0.04
12	Lead Project Manager	176	5.73	1.27	-0.11
13	Organisation	314	5.7	1.41	.13*
14	Occupation	314	6.27	0.94	.24**
15	Client	142	4.28	1.52	0.13
16	Job	450	4.43	1.12	.21**
17	Career	450	4.85	1.17	.14*

* Correlations is significant at the .05 level (2-tailed),

** Correlation is significant at the .01 level (2-tailed).

Table 4.2b

Affective commitment to the project shares the least variance with the marker variable ($r = .04$, $p = .52$). Following Lindell and Withney's (2001) approach, we have corrected the correlations between commitment and creativity for this lowest correlation between commitment of the project and the marker variable. Table 4.3c show the correlations between commitment and creativity without correction, Table 4.3d shows the correlations corrected using the correlation of the marker variable. Out of the 63 correlations between commitment (seven foci) and creativity (2x4 phases and routine behaviour), ten correlations become non-significant (16%).

Table 4.3c Uncorrected correlations

<i>Creativity</i>	<i>ICPE</i>				<i>RCPE</i>				<i>Routine</i>
	P1	P2	P3	P4	P1	P2	P3	P4	Behaviour
<i>Commitment</i>									
Project	.36**	.31**	.28**	.32**	.29**	.20**	.16**	.30**	.42**
Supervisor project	.17*	.27**	.16*	.19*	-.03	-.03	-.05	.09	.23**
Organisation	.11*	.07	.17**	.17**	.18**	0.07	.11*	.23**	.17**
Occupation	.27**	.21**	.27**	.29**	.24**	.15**	.13*	.30**	.31**
Client	.04	-.04	.15	.15	.18*	.09	.18*	.15	0.07
Job	.23**	.09	.26**	.24**	.27**	.13*	.23**	.31**	.19**
Career	.12*	.16**	.20**	.21**	.16**	.09	.14*	.27**	.21**

* Correlation is significant at the 0.05 level (2-tailed),

** Correlation is significant at the 0.01 level (2-tailed)

*Table 4.3c***Table 4.3d Correlations corrected for marker effect**

<i>Creativity</i>	<i>ICPE</i>				<i>RCPE</i>				<i>Routine</i>
	P1	P2	P3	P4	P1	P2	P3	P4	Behaviour
<i>Commitment</i>									
Project	.33**	.28**	.25**	.29**	.26**	.17**	.13*	.27**	.39**
Supervisor project	.13	.24**	.13	.16*	-.07	-.07	-.10	.05	.20**
Organisation	.07	.03	.13*	.13*	.15**	.03	.08	.20**	.13*
Occupation	.24**	.17**	.24**	.26**	.20**	.12*	.09	.27**	.28**
Client	-.00	-0.09	.11	.12	.15	.06	.14	.11	.03
Job	.19**	.06	.23**	.21**	.25**	.10	.19**	.28**	.16*
Career	.09	.13*	.17**	.17**	.13*	.05	.10	.24**	.17**

Red = correlation becomes non-significant,

Orange = correlation significance changes from $p < .01$, to $p < .05$

Table 4.3d

Confirmatory factor analysis using the marker variable

Following the increasing applications of structural equation modelling (SEM) with latent variables in organisation and management research, SEM has been used to test the effect of marker variables (Richardson, Simmering, and Sturman, 2009; Williams, et al., 2010). The effect of the marker variable is tested by comparing two structural models. The first model includes the independent variables with the corresponding items, as well as the marker variable with its corresponding items. In the second model the items of the independent variables are allowed to load on the marker variable. Following Rafferty and Griffin (2004) to achieve identification of the model, in the models the correlation between the marker variable and the independent variables are restricted to 0.

A test of the difference of overall explained variance tests if the independent variables have a significant level of variance in common with the marker variable. If this test is not significant, the marker variable has no significant variance in common with the independent variable, then one may conclude the variables are relatively free from common method variance. Table 4.3e presents the results of the tests including the marker variable. From this we may conclude that the commitment variables are much more affected by the marker variable than the creativity items, in specific commitment to the organisation, commitment to the profession, career orientation and job involvement. We may assume common method variance exists, however, it seems to have an unequal effects across the constructs under study (Richardson, et al., 2009).

Table 4.3e Model comparison marker variable

		<i>Original model</i>							
<i>No</i>	<i>Model</i>	χ^2	<i>DF</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>			
1	LRA ICWB without routine	1961	1174	0.90	0.90	0.05			
2	LRA ICWB with routine	2569	1484	0.89	0.88	0.05			
3	Final key-mediation ICPE with routine	2461	1506	0.91	0.90	0.05			
4	LRA RCWB without routine	2062	1232	0.91	0.90	0.05			
5	LRA RCWB with routine	2621	1547	0.90	0.98	0.05			
6	Final key-mediation RCWB with routine	2573	1550	0.90	0.89	0.05			

		<i>Model with marker variable</i>					<i>Test χ^2 difference</i>		
<i>No</i>	<i>Model</i>	χ^2	<i>DF</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	$\Delta\chi^2$	ΔDF	<i>Prob.</i>
1	LRA ICWB without routine	2141	1319	0.91	0.9	0.05	180	145	0.03
2	LRA ICWB with routine	2776	1646	0.89	0.88	0.05	207	162	0.01
3	Final key-mediation ICPE with routine	2668	1669	0.90	0.90	0.05	207	163	0.01
4	LRA RCWB without routine	2295	1380	0.90	0.89	0.05	233	148	0.00
5	LRA RCWB with routine	2876	1712	0.89	0.88	0.05	255	165	0.00
6	Final key-mediation RCWB with routine	2828	1716	0.90	0.89	0.05	256	166	0.00

Table 4.3e

Unmeasured latent method construct

This technique aims to specify an unmeasured latent method construct (ULMC) with the purpose to specify the variance shared among substantive indicators. Rather than a marker variable, a latent construct with no unique observed indicators represents the shared variance due to common method (Richardson, et al., 2009). Similar to the CFA models including the marker variable the nested models are compared on the basis of the model fit. To achieve identification of the models the correlation between the ULMC and the independent variables are restricted to 0. To test the overall CMV effect, the latent construct of the substantive indicators of the study in two combinations are included in model 1. Model two includes the same model adding the ULMC including all items of the substantive indicators of the study. Table 4.3f shows the model comparisons.

There is an indication that there may be a problem with common method variance, as the model including ULMC explains significantly more of the variance in the data. On the other hand, this technique has been critiqued to overstate the CMV since this technique is unable to distinguish between biased variance and substantive variance, since it does not include any unique indicators (Richardson et al., 2009). This effect may be extensive in the current study, since we expect a strong relationship between the commitment and creativity variables, as well as high correlations between the foci of commitment and types and phases of creativity.

Table 4.3f Unmeasured Latent Method Construct

<i>No</i>	<i>Items included</i>				
1	Routine, ICWB phase 1-4, RCWB phase 1-4				
2	Routine, ICWB phase 1-4, RCWB phase 1-4, org, LPM, proj. client, prof.				
3	Routine, ICWB phase 1-4, RCWB phase 1-4, career, job				

<i>Model 1: CFA of all substantive indicators</i>					
<i>No</i>	χ^2	<i>DF</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>
1	1342	491	0,89	0,87	0,07
2	2347	1085	0,89	0,88	0,05
3	2708	1072	0,85	0,83	0,05

<i>Model 2 including ULMC</i>						<i>Test χ^2 difference</i>		
<i>No</i>	χ^2	<i>DF</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	$\Delta\chi^2$	ΔDF	<i>Prob.</i>
1	1600	525	0,86	0,84	0,07	258,27	34	< .000
2	2058	1036	0,91	0,9	0,05	289,53	49	< .000
3	2462	1038	0,88	0,86	0,06	245,59	34	< .000

*Table 4.3f**Conclusion on CMV and model test*

When comparing the techniques available to detect CMV, Richardson et al. (2009) do not recommend the use the correlational marker nor the ULMC approaches in detecting CMV. They conclude after their assessment of the various techniques that in specific the ULMC method is the worst performing technique (Richardson et al., 2009). They do, however, highlight the practical value of the CFA marker in the way it can contribute to the making of more informed judgments about whether or not the data is contaminated with CMV.

Consistent with this study, in our case the tests for CMV are inconsistent; the Harman's one-factor test indicates no CMV, the correlational marker technique indicates some CMV, and the unmeasured latent method construct test indicates there is a reason to expect CMV. Following the advice of Richardson et al. (2009), we follow the results of the CFA marker test, which indicates some significant results. However, these results are in line with the a priori identified marker to be a non-ideal marker for commitment, relatively ideal marker for creativity. The findings confirm our expectations, since we find the marker variable to have an insignificant effect of (almost) all of the CWB constructs as well as an insignificant effect on commitment to the project, supervisor and client. Confirming our expectations from previous studies, there is a relation between the marker and commitment to

the organisation, the profession, the job and the career. On the basis of the CFA marker test we may conclude there to be little reason to expect CMV in the data, the effects found are likely to be due to real, theoretically expected effects.

In case we would like to correct our models for CMV, previous studies are very sceptical about the use of any of the CMV identification techniques to be used to correct for bias caused by common method variance (Richardson et al., 2009). We do however, have some concerns about the CMV found in the effect of CSR on phases 2-3 of radical creative process engagement. Therefore, an additional test has been conducted to assess the effect of CMV in the final models connecting commitment and creativity, which will be presented in the next chapter.

Including the marker variables as control variable in the models affects the overall explained variance, the model fit and tests have already been presented in Table 4.3e. In the next chapter the model results will be presented. When the marker variable is included in these hypothesized models as an extra control variable, there is no significant effect on incremental and radical CWB in all phases. Neither, and more importantly, is there any change in the effects between the multiple foci of commitment and the two types of CWB when the marker variable is included as an extra ‘control’ variable in the model.

The marker variable does have a significant correlation with commitment to the organisation, which is allowed for in the models when including the marker effect on the two types of CWB. Since the marker variable does not affect any of the hypothesized relations, and the significant relations affect commitment in line with our theoretical expectation, we can conclude CMV is unlikely to bias our findings. Therefore, in the following section presenting the results of the analysis, the hypothesized models will not include any of the CMV test constructs.

4.4 Control variables

In the literature on the multiple foci of commitment the control variables that are used are similar: age, gender, education and tenure. Because of the multiple foci of commitment approach, organisational tenure should be complemented by professional tenure, client tenure and team tenure. Other control variables that are used are team size and team membership, profession type and job type.

Five control variables that have been found significant in relation to creativity are age, gender, company tenure, education and job type (George, 2007; Shalley, et al., 2004). Job characteristics are also mentioned as a factor influencing creativity (Oldham and Cummings, 1996; Tierney, et al., 1999). Another factor that is been argued to have a significant influence on creativity is intrinsic motivation (Amabile, 1988; Amabile, 1996; Tierney, et al., 1999). Intrinsic motivation may be expected to have a mediating role between commitment and creative process engagement. Intrinsic motivation may be measured with three items adapted from Amabile (1985).

Comparing creativity and commitment literature control variables, the following control variables will be included: age, gender, education, job type, organisation tenure, profession tenure, client tenure and team tenure. Also the average duration of projects will be included as a control variable in the survey, as it provides information about the length of an average creative process.

Test of the control variables

In order to assess the unbiased effects between commitment and CWB, a series of control variables will be added to the models. The control variables are discussed in the description of the research arena. Two types of control variables are added to the model. The first type is concept specific, these variables include: age, level of education, grade in the organisation, gender, organisation tenure, project tenure, client tenure, length of the project and project size (number of people working on the project). A second set of control variables are specific to the research setting are specified in the description of the research arena. These include: membership of a professional body, program type, role in the project, and industry type.

First, a series of linear regression analyses are conducted to test the effect of control variables on each phase of CWB separate. The control variable are included in a linear regression model following a stepwise backward elimination procedure, in which one by one the control variable showing the least unique variance effect on the CWB variable was

removed from the model. This process was continued until all effects were significantly affected the variance of the CWB variable. Table 4.4a shows the results of the significant standardized regression effects of the control variables and explained variance of the regression models of incremental and radical CWB, separated for each phase.

Second, in our understanding the incremental CWB construct consists of four independent phases, concluding from the confirmatory factor analysis in the previous chapter. This may be concluded from the CFA test of the model including a second-order factor, which failed to explain significantly more of the variance in the data than the model without this second-order factor. However, the correlations between the four phases of incremental CWB are substantial (for correlations see table 4.2b). Consequently, the effect of commitment on CWB is better represented in a Latent Regression Model (LRM) which allows inclusion of multiple dependent variables which are unconstrained (allowed to correlate). Since the phases of incremental CWB are related, it is to be expected effects of control variables to be slightly different in a LRM model. To test for these differences the selected control variables are included in three Latent Regression Models, of which the results are presented in Table 4.4b.

Table 4.4a Regression analysis of the control variables in separate linear regression analyses

<i>Control</i>	<i>Group</i>	<i>Incremental CWB</i>				<i>Radical CWB</i>				<i>Routine</i>
		<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>	<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>	<i>Behaviour</i>
Tenure Organisation										-.15*
Gender	Women					-.14**		-.17**		
Grade Organisation	Administrative	-.17**		-.27**	-.28**				-.21**	-.20**
Grade Organisation	Manager			-.17**	-.19**	-.13*	-.15*	-.16**	-.16**	
Grade Organisation	Partner			.12*				.14*		
Grade Organisation	Specialist							-.13*		
Role Project	Financial Administrator	-.14*	-.18**			-.25**	-.19**	-.25**	-.22**	
Role Project	Project participant		-.13*			-.19**	-.15*		-.16**	
Role Project	Participant Project Manager								-.14*	-.14*
Stage Project	75% or more completed	-.13*								
Program type	SMART	.15**								
Industry	Consultants	-.13*								
Education	A level or GCSE						-.12*			
	Adjusted R Square	.12	.04	.11	.10	.14	.08	.16	.15	.07
	F-value	8.98**	6.73*	13.24**	17.48**	12.78**	7.35**	12.49**	11.3**	7.40**

* Regression effect is significant at the 0.05 level (2-tailed), ** Regression effect is significant at the 0.01 level (2-tailed)

Table 4.4a

Table 4.4b Standardized regression effects of the control variables in three Latent Regression Models

<i>Control</i>	<i>Group</i>	LRM 1 <i>Incremental CWB</i>				LRM 2 <i>Radical CWB</i>				LRM 3 <i>Routine Behaviour</i>
		<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>	<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>	
Tenure Organisation						-.14**		-.13**		
Gender	Women									
Grade Organisation	Administrative	-.20**		.25**	-.31**				-.19**	-.60*
Grade Organisation	Manager			-.13**	-.16**	-.18**	-.16**	-.19**	-.19**	
Grade Organisation	Partner									
Grade Organisation	Specialist									
Role Project	Financial Administrator					-.28**	-.20**	-.28**	-.26**	
Role Project	Project participant		-.12*			-.12*			-.12*	
Role Project	Participant Project Manager									
Stage Project	75% or more completed	-.14**								
Program type	SMART									
Industry	Consultants	-.11*								
Education	A level or GCSE									
Adjusted R Square		.10**	.02	.08**	.12**	.16**	.08*	.15**	.18**	.04

* Regression effect is significant at the 0.05 level (2-tailed), ** Regression effect is significant at the 0.01 level (2-tailed)

Table 4.4b

Chapter 5

Findings and Discussion: The variable centred approach

In the previous chapter, the method was outlined, the survey measures have been developed, and the measurement model has been tested and found to be reliable. The measurement model includes the independent and dependent variables of the thesis: the measures of multiple foci of commitment and the measures of incremental and radical creative work behaviour in four phases. Following the confirmation of the reliability of the measurement model, in this chapter the second step of the two-step approach towards latent modelling is followed, including the test of the structural relations between the multiple foci of commitment and creative work behaviour.

Following the variable-centred approach, direct effects and mediation between the multiple foci of commitment will be tested. First, an overview of the relations between the multiple foci of commitment creative work behaviour is provided on the basis of a correlation matrix. Second, hypotheses one to three are tested using latent regression analysis. Third, issues with multicollinearity are discussed. Fourth, the mediation models proposed in hypotheses four to six are tested on comparison of structural equation models. This chapter concludes with a summary of the findings and discussion.

In this chapter the hypotheses, which were developed in chapter two, will be tested. Subsequently to the variable centred types of analysis in chapter five, in chapter six the data is analysed using a person-centred type of analysis. The reason for this is to further explore the data on characteristic profile of commitment in relation to creative work behaviour. This type of analysis provides more insight into the complex relations between the multiple foci of commitment and creative work behaviour.

5.1 Results variable-centred analyses: Direct effects

In this section the direct effects of the multiple foci of commitment on creative work behaviour are tested. First, an overview of the relations between the multiple foci of commitment and creative work behaviour will be provided on the basis of a Pearson correlation matrix. The overall relations between multiple foci of commitment and creative work behaviour will be discussed.

Hypothesis 1 will be tested by measuring the direct effects of the seven multiple foci of commitment on routine behaviour in a Latent Regression Model (LRM). Hypothesis 2 will be tested by measuring the direct effects of the seven foci of commitment on the four separate stages of incremental creative behaviour. In the previous chapter we found incremental creative work behaviour (ICWB) in four phases to be independent variables, rather than represented by a second-order factor as one overall kind of behaviour. The effects of commitment on ICWB will be discussed with specific interest in the differences between the effects for the four phases of the creative process.

The four phases of radical creative work behaviour (RCWB) are tested to be better represented with a second-order factor representing the construct as a whole. However, hypothesis 3 will be tested by measuring the direct effects of the seven foci of commitment on the separate four phases of RCWB to make comparison between incremental and radical CWB possible. The total of three models provides a solid basis for the comparison and discussion of the effects of the multiple foci of commitment on the types of creativity.

5.1.1 Overview relations

Table 5.1a reports the correlations between commitment and the types of creative work behaviour. Per type and phase of creative work behaviour the strongest relations with commitment are indicated in green, the weakest correlations in red. Pearson correlations between the variables represent how much of the variance is shared between the variables, and it is tested if this variance is significantly stronger than zero.

Table 5.1a Pearson correlations

No	Variable	Mean	S.D.	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Commitment</i>																			
1	Project	4.54	1.31	450	1														
2	Lead Project Manager	5.73	1.27	176	-.04	1													
3	Profession	6.27	0.94	314	.17**	.08	1												
4	Career	4.85	1.17	450	.95**	-.03	.21**	1											
5	Job	4.41	1.18	450	.65**	-.06	.32**	.64**	1										
6	Organization	5.70	1.41	314	.18**	.08	.34**	.17**	.43**	1									
7	Client	4.18	1.54	142	.01	-.08	.07	.03	.15	.17*	1								
<i>CWB</i>																			
8	ICWB Phase 1	5.40	0.98	323	.14*	.17*	.27**	.12*	.22**	.11*	.04								
9	ICWB Phase 2	5.84	0.86	322	.12*	.27**	.21**	.16**	.10	.07	-.04	.46**							
10	ICWB Phase 3	5.22	0.96	316	.21**	.16*	.27**	.20**	.26**	.17**	.15	.46**	.46**						
11	ICWB Phase 4	5.36	0.92	316	.21**	.23**	.27**	.21**	.23**	.16**	.16	.45**	.47**	.95**					
12	RCWB Phase 1	5.01	1.03	323	.16**	-.03	.24**	.16**	.27**	.18**	.18*	.58**	.39**	.47**	.48**				
13	RCWB Phase 2	4.68	1.18	321	.09	-.03	.15**	.10	.14*	.07	.09	.35**	.46**	.33**	.32**	.48**			
14	RCWB Phase 3	4.71	1.15	320	.15**	-.05	.13*	.14*	.23**	.11*	.18*	.39**	.34**	.45**	.45**	.66**	.63**		
15	RCWB Phase 4	5.16	0.97	319	.26**	.09	.30**	.27**	.32**	.23**	.15	.51**	.49**	.70**	.70**	.63**	.49**	.60**	
16	Routine behavior	6.12	0.82	391	.15**	.23**	.31**	.16**	.07	.13*	.05	.40**	.41**	.39**	.43**	.30**	.24**	.22**	.44**

* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed)

Table 5.1a

Findings

The correlations show an overall significant and strong correlation between the commitments and the behaviours. The strongest relations are between commitment to the job and radical creative work behaviour in the fourth phase ($r = .32^{**}$), and commitment to the profession shares most variance with routine behaviour ($r = .31^{**}$). The weakest and non-significant correlations are found between commitment to the client and incremental creative behaviour, and between commitment to the lead project manager and radical creative work behaviour.

From the analysis in the previous chapter it was found incremental and radical creative work behaviour in the fourth phase (idea evaluation) to be strongest related to routine behaviour. This is confirmed again in the relationships between commitment to the profession and the behaviour. Commitment to the profession is strongest related to routine behaviour and incremental creative work behaviour. The relation between radical creative work behaviour and commitment to the profession is weaker, except for radical creative work behaviour in the fourth phase ($r = .30^{**}$).

For routine behaviour, the strongest relationships are with commitment to the profession and commitment to the lead project manager. Medium strong relations exist between routine behaviour and the project, the career and the organisation. For incremental creative work behaviour, the overall strongest relations are between commitment to the profession, except for phase two (information search) which is most related to commitment to the supervisor. Commitment to the organisation is a strong predictor, however only in the third and fourth phase of incremental creative work behaviour. Radical creative work behaviour shares the strongest correlation with commitment to the job, except for radical creative work behaviour in the second phase (information search), which is most strongly related to commitment to the profession. This indicates that, next to phase four, phase two of the creative process is also a less radical phase of the creative process.

The third phase of the creative process (idea generation) has been found to be the most radical phase in comparison to the other phases. The third phase of incremental creative behaviour is more strongly related to commitment to the job in comparison to the other phases. In addition, radical creative work behaviour in the first and the third phase are significantly related to commitment to the client, indicating a specific role of commitment to the client and this most radical phase of radical creative work behaviour.

Overall, this overview of the relations confirms the proposed model, with the more proximal commitments to predict the more radical creative behaviour (the job), and the more project related foci of commitment to have the strongest effect on incremental creative work

behaviour (the project, the lead project manager). Confirming findings from chapter four, routine behaviour on the project is strongly related to incremental work behaviour. Routine behaviour on the project shares correlation with commitment to the project, rather than with the organisation as hypothesized. Interestingly, commitment to the leader has a strong relation with routine behaviour, stronger than with incremental work behaviour, and non-significant with radical creative work behaviour.

Discussion

A limitation of these correlations are that they are based on the sum of the items measuring the construct, and not on model based relations between the variables as latent constructs, which will be the approach used to test the hypotheses later in this section. In addition, these simple correlations are not corrected for effects of demographics and control variables. Therefore, these correlations provide some insight and an overview of the relations. However, more specific test are necessary to test the hypotheses.

5.1.2 Test of the direct effects

The effects of the seven foci of commitment on our dependent variables are tested in three Latent Regression Models, to test hypotheses 1, 2 and 3. A Latent Regression Analysis using maximum likelihood estimation is conducted because this type of modelling allows for the inclusion of multiple dependent variables. This is appropriate since it is found that incremental creative work behaviour is better represented as four independent constructs rather than including a second-order factor.

Latent modelling is preferred over simple regression modelling because constructs are measured by a set of survey items together representing latent constructs. To adequately represent these constructs as latent constructs in the model testing the structural relations, latent models are deemed appropriate in our case. In the previous section the effects of the control variables are determined and discussed. The control variables identified as having an effect on the construct under study will be included in the models.

To test hypothesis 1, in Latent Regression Model one the effect of the seven foci of commitment is regressed on routine behaviour. The fit of this model with the data is sufficient ($\chi^2 = 1029.661$ (584), CFI = .94, TLI = .93, and RMSEA = .05). Since the measurement model has been tested in the previous section, the factor loadings of the items on the latent constructs are not included in the results. All standardized effects (Betas) of the control variables and the multiple foci of commitment on routine behaviour are included in

Table 5.1b in the column LRM 1. Table 5.1c shows the correlations between the multiple foci of commitment in their respective models.

Hypothesis 1a is confirmed with the commitment to the project to be the strongest predictor of routine behaviour with standardized beta of .30** as can be seen from Table 5.1b. Commitment to the lead project manager has no significant effect on routine behaviour, therefore, hypothesis 1b is not confirmed. However this may be due to the strong correlation between commitment to the project and commitment to the lead project manager in this model ($r = .46^{**}$).

To test hypothesis 2, in Latent Regression Model two the effect of the seven foci of commitment is regressed on incremental creative work behaviour in the four phases. In addition to the identified control variables, the model also controlled for routine behaviour. The reason for this is our specific interest in creative rather than routine or in-role behaviour in the project. By including the effect of routine behaviour in the prediction of incremental CWB, this enables us to test for the effect of commitment on the truly creative element of CWB, over and above the routine or extra role element.

The fit of this model with the data is sufficient ($\chi^2 = 2191.886$ (1372), CFI = .92, TLI = .91, and RMSEA = .05). Since the measurement model has been tested in the previous section, the factor loading of the items on the latent constructs are not included in the results. All standardized effects of the control variables and the multiple foci of commitment on routine behaviour are included in Table 5.2 in the LRM 2 column.

The model confirms earlier findings on routine behaviour being strongly related to incremental work behaviour, with routine behaviour having strong significant effects on incremental work behaviour in all four phases. Routine behaviour has a particularly strong effect on incremental work behaviour in the fourth phase (idea evaluation). This confirms the findings that idea evaluation is not the most radically creative of the phases in the creative process, standardized $\beta = .31^{**}$.

Hypothesis 2a is confirmed with commitment to the project having a significant effect on incremental work behaviour in the first three phases. The effect of commitment to the lead project manager, hypothesis 2b, is not significant. The correlations in the model are, however, strong and could explain non-significant effects. Commitment to the project shares a strong correlation with commitment to the lead project manager ($\beta = .47^{**}$), with commitment to the profession ($\beta = .39^{**}$), with commitment to the organisation ($\beta = .24^{**}$), with commitment to the career ($\beta = .21^{**}$), and with commitment to the job (.16**).

Hypothesis 2c is partly confirmed, with commitment to the organisation to have a significant effect on incremental creative work behaviour in phase one and three ($\beta = .14^*$). Commitment to the profession and commitment to the client are found to have no significant effect on any of the phases of incremental creative work behaviour, therefore, hypotheses 2d and 2e are not confirmed.

The significant effects of commitment of the career and the job on incremental creative work behaviour have not been hypothesized. The effects of commitment to the career and the job are significant on incremental work behaviour in phase one and three (problem finding and idea generation). This does confirm findings from the correlations between the phases of incremental and radical creative work behaviour on incremental creative behaviour in phases one and three to be more radical than in phase four (idea evaluation). Commitment to the job and commitment to the career have both been hypothesized to have an effect on radical creative work behaviour.

The strong correlation between commitment to the job and commitment to the career ($r = .74^{**}$), due to multicollinearity, is the cause of the negative effect of commitment to the career. The issues and limitations in relation with multicollinearity will be discussed in the next section. Similarly the strong correlation between commitment to the job and commitment to the organisation ($r = .43^{**}$) may have caused the effect of commitment to the organisation to be negative (standardized $\beta = -.14^*$).

To test hypothesis 3, in Latent Regression Model three the effect of the seven foci of commitment is regressed on radical creative work behaviour in the four phases. Similar to incremental work behaviour, in addition to the identified control variables in the model is also controlled for routine behaviour. Additionally, the four phases of radical creative work behaviour are treated as four separate independent variables, against the result of the measurement model which suggest the inclusion of a second-order factor. However, it is decided to leave this factor out here to enable comparison between incremental and radical creative work behaviour.

The fit of this model with the data is sufficient ($\chi^2 = 2275.187$ (1414), CFI = .91, TLI = .91, and RMSEA = .05). Since the measurement model has been tested in the previous section, the factor loadings of the items on the latent constructs are not included in the results. All standardized effects (Betas) of the control variables and the multiple foci of commitment on routine behaviour are included in Table 5.1b in the LRM 3 column.

Hypotheses 3a, the effect of commitment to the profession on radical creative work behaviour, is only confirmed for the fourth phase of radical creative work behaviour (idea

evaluation). Hypotheses 3b and 3c are confirmed with commitment to the job and the career to have the strongest effect on radical creative work behaviour, particularly on the first and third phase. The negative effect of commitment to the career may be due to multicollinearity effects discussed in the next section. In addition to the hypotheses, commitment to the organisation is found to have a negative effect on creative work behaviour in the third phase, which is an effect that has not been hypothesized. However, this effect does confirm the idea that 'local' environments may hinder the extent to which employees undertake radical creative work behaviours.

Unexpectedly, commitment to the project was found to have an effect on the fourth (evaluation) phase (standardized $\beta = .15^*$). This may be explained by findings which are described in detail in chapter four, with the fourth phase of the creative process is significantly related to routine behaviour. The effect of commitment to the profession on the fourth phase of radical CWB is a confirmation of this previous finding. Therefore it can be concluded that the fourth phase is less radically creative than the other phases of the radical creative process (standardized $\beta = .26^{**}$).

Table 5.1b Latent Regression Analysis direct effects commitment on Incremental, Radical CWB and Routine Behaviour

<i>Control variable</i>	<i>Dummy</i>	LRM 1	LRM 2				LRM 3			
		<i>Routine Behavior</i>	<i>Ph 1</i>	<i>Ph 2</i>	<i>Ph 3</i>	<i>Ph 4</i>	<i>Radical CWB Ph 1</i>	<i>Ph 2</i>	<i>Ph 3</i>	<i>Ph 4</i>
Tenure Organisation		-.02								
Gender	Women						-.15**		-.13**	
Grade Organisation	Administrative	.01	-.14*		-.22**	-.27**				-.15*
Grade Organisation	Manager				-.11**	-.15**	-.15*	-.15*	-.17**	-.16**
Grade Organisation	Partner				.02					
Grade Organisation	Specialist								-.08	
Role Project	Financial Administrator		-.07	-.03			-.18**	-.15*	.23**	-.23**
Role Project	Project participant			-.09			-.10*	-.08	.06	-.04
Role Project	Participant Project Manager	-.04								-.09
Stage Project	75% or more completed		.12*							
Program type	SMART		.06							
Industry	Consultants		.11*							
Education	A level or GCSE							-.08		
Affective commitment	Project	.30**	.21*	.25*	.22*	.04	.22*	.13	.09	-.05
	Lead Project Manager	.10	.05	.04	.09	.12	-.09	-.08	-.06	.09
	Organisation	.01	-.14"	-.04	-.14*	-.09	.12	-.09	-.18*	-.01
	Profession	.18**	.14	.01	.04	.11	.10	.08	.05	.15*
	Client	.01	-.04	.14	.03	.11	.16	.03	.13	.07
	Job	-.07	.27*	.08	.40**	.19	.36**	.05	.35**	.20
	Career	.14	-.22*	-.06	-.29**	-.08	-.22*	-.13	-.21*	-.02
	Routine behavior	n/a	.22**	.28**	.24**	.34**	.09	.11	.11	.26**
Adjusted R Square		.23**	.27**	.25**	.24**	.32**	.29**	.11**	.22**	.31**

" Regression effect is marginally significant at p = .052 *effect is significant at the 0.05 level (2-tailed), ** effect is significant at the 0.01 level (2-tailed)

Table 5.1b

Table 5.1c Correlations between the multiple foci of commitment LRA models 1, 2 and 3

<i>Affective Commitment</i>	<i>Affective Commitment</i>	LRM 1 <i>Routine Behaviour</i>	LRM 2 <i>Incremental CWB</i>	LRM 3 <i>Radical CWB</i>
Career	Job	.74**	.74**	.74**
Project	Job	.16**	.22**	.22**
Project	Career	.21**	.24**	.22**
LPM	Job	-.03	-.01	-.03
LPM	Career	-.01	.00	-.04
LPM	Project	.46**	.47**	.47**
Profession	Job	.31**	.33**	.33**
Profession	Career	.25**	.27**	.26**
Profession	Project	.36**	.39**	.40**
Profession	LPM	.09	.10	.13
Organisation	Job	.43**	.45**	.44**
Organisation	Career	.21**	.23**	.21**
Organisation	Project	.24**	.27**	.30**
Organisation	LPM	.09	.10	.12
Organisation	Profession	.34**	.37**	.37**
Client	Job	.15	.19	.19
Client	Career	.09	.12	.12
Client	Project	.04	.07	.07
Client	LPM	-.11	-.06	-.15
Client	Profession	.09	.11	.08
Client	Organisation	.16	.18*	.17*

*Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed)

Table 5.1c

5.1.3 Multicollinearity

The results presented in the previous section have to be interpreted with caution since there are some indications of multicollinearity. Collinearity is high correlations among latent exogenous constructs. Multicollinearity occurs when more than two latent exogenous constructs are highly correlated. In this case the correlations between the multiple foci of commitment are high, specifically between commitment to the job and commitment to the career. However, multicollinearity is inherent in the theoretical construct of multiple foci of commitment. In addition, the context of inter-organisational innovation project is likely to strengthen commitment to multiple foci and, therefore, strengthen multicollinearity. This is a characteristic of the data, and potentially, a characteristic of employees working in the context of inter-organisational projects.

Multicollinearity can have a damaging effect on multiple regression models. When multicollinearity exists, the estimated regression coefficient can fluctuate widely, making it risky to interpret the coefficients as an indicator of the relative importance of predictor variables (Cooper and Schindler, 2006). Signs of issues with multicollinearity in latent models are described by Grewal et al. (2004) to include non-significant coefficient estimates even though the overall regression is highly significant; 'wrong' signs of the coefficients; and unstable parameter estimates. Multicollinearity can be identified by: (1) high correlations between constructs (between .6 and .8), (2) a high value for the variable inflation factors (VIF) index (> 2.5), and (3) results with negative effects which cannot be explained on theoretical grounds (Cooper and Schindler, 2006).

First indications of potential issues with multicollinearity in the models tested in the previous section are the negative effects of commitment to the career and commitment to the organisation on creative work behaviour. Correlations between the multiple foci of commitment are not particularly high, except for the correlation between commitment to the job and commitment to the career (.64), commitment to the project and the LPM (.45), and commitment to the organisation and the job (.44). In the case of commitment to the job and commitment to the career the multicollinearity is between .6 and .8 which is considered high. Type II error rates can be substantial (greater than 50%).

Composite reliability (Table 4.4b) is above .7 and in most of the scales above .8, which should off-set the high correlations. Composite reliability for commitment to the career is .69 and commitment to the job is .66, which are below the .7, increasing the chance of multicollinearity between these variables. Composite reliability for commitment to the organisation (.89), commitment to the project (.82), and commitment to the lead project

manager (.74) are all above .7 which decreases the chance of biased effects because of multicollinearity. Another aspect which could off-set the effect of multicollinearity is a large sample in ratio to the number of parameters in the model. For the Latent Regression Models two and three the sample size ratios are between 4 and 4.5, which are reasonable, but not particularly high to off-set the multicollinearity effect.

The variable inflation factors (VIF) are calculated on the basis of the sumvariables in a 'simple' regression analysis. The VIF values vary between the dependent variables incremental and radical creative work behaviour in the four phases. To provide a more accurate impression of the VIF values in the latent model, the values are calculated on the basis of the composite of the four phases for incremental and radical creative work behaviour; these values are displayed in Table 5.1d. VIF values are specifically high for commitment to the project and commitment to the career. Removing commitment to the project or commitment to the career from the model reduces VIF values to below 2.5. Most of the problematic levels of multicollinearity seem to take place between commitment to the project and commitment to the career.

One way of dealing with multicollinearity is to remove one of the two constructs with high correlations, or to let the items of the two construct load all on one overarching construct. Removing a construct or 'combining' constructs is a solution if constructs are expected to overlap. In the case of multiple foci of commitment constructs are well-defined and distinguished. In addition, the tests on reliability of the measures in the previous chapter have given the indication that the measures of commitment are valid and reliable. In other words, the variables are measured well, representing a separate construct; they are, however, strongly related constructs.

The aim of this study is to compare the effects of the multiple foci of commitment on three types of work behaviour. Removing one of the foci of commitment from the model will limit and bias the model in its representation of the full set of the foci of commitment in the context of inter-organisational innovation projects. When commitment to the job is removed from the analysis the multiple foci of commitment do not represent the complete set of commitments employees working in inter-organisational innovation projects may develop commitment towards. In addition, removing commitment to the job will cause other effects to change, both effects of commitment on work behaviour, as well as effects between foci of commitment.

To conclude, in the analysis of the direct effects of multiple foci of commitment on creative work behaviour there are substantial issues with multicollinearity. The negative

regression coefficients and instability of the effects create problems with the analysis of the effects. On the other hand, these strong effects between the foci of commitment may also be interpreted as a finding of how multiple foci of commitment interact and relate to each other in the specific context of inter-organisational innovation projects.

Since the analysis of direct effects is limited, two other approaches towards the analysis will be taken which acknowledge the strong inter-relations between the multiple foci of commitment. In the next section mediation models will be tested in which the multiple foci of commitment are allowed to interact on the three types of work behaviour. Additionally, taking a person-centred approach, a Latent Mixture Model will allow even further interaction and coexistence between the multiple foci of commitment, discussed in chapter five.

Table 5.1d Multicollinearity statistics

Incremental CWB

No	Variable	Tolerance VIF		Eigen value	Condition Index	Variance Proportions						
						1	2	3	4	5	6	7
	Constant	n/a	n/a	7.69	1	0	0	0	0	0	0	0
1	Project	0.09	10.67	0.12	8.06	0.01	0.00	0.01	0.00	0.50	0.00	0.01
2	Supervisor	0.91	1.10	0.09	9.32	0.01	0.04	0.19	0.01	0.35	0.00	0.00
3	Organisation	0.73	1.36	0.06	11.75	0.00	0.18	0.47	0.00	0.00	0.03	0.00
4	Profession	0.73	1.37	0.02	19.91	0.03	0.03	0.33	0.18	0.07	0.59	0.02
5	Client	0.88	1.13	0.02	20.78	0.00	0.39	0.01	0.47	0.00	0.29	0.01
6	Job involvement	0.43	2.30	0.01	28.68	0.03	0.30	0.00	0.32	0.06	0.03	0.00
7	Career	0.10	9.80	0.00	52.27	0.92	0.06	0.00	0.02	0.02	0.05	0.96

Radical CWB

No	Variable	Tolerance VIF		Eigen value	Condition Index	Variance Proportions						
						1	2	3	4	5	6	7
	Constant	n/a	n/a	7.69	1	0	0	0	0	0	0	0
1	Project	0.10	10.17	0.11	8.29	0.00	0.01	0.00	0.01	0.00	0.54	0.00
2	Supervisor	0.91	1.09	0.09	9.20	0.00	0.01	0.08	0.12	0.01	0.32	0.01
3	Organisation	0.75	1.33	0.06	11.51	0.01	0.00	0.19	0.55	0.00	0.01	0.02
4	Profession	0.75	1.34	0.02	19.75	0.01	0.02	0.00	0.19	0.01	0.05	0.87
5	Client	0.89	1.13	0.02	20.02	0.02	0.01	0.36	0.12	0.63	0.01	0.04
6	Job involvement	0.47	2.15	0.01	29.26	0.82	0.03	0.33	0.00	0.33	0.06	0.04
7	Career	0.11	9.50	0.00	52.09	0.13	0.92	0.03	0.00	0.02	0.01	0.04

Table 5.1d

5.2. Results variable-centred analyses: Mediation models

In the previous section the hypotheses 1 to 3 have been tested including the direct effects of the multiple foci of commitment on creative work behaviour. Hypotheses 4, 5 and 6 include the mediation effects between the multiple foci of commitment in their effect on the three types of work behaviour. To test which mediation effects are the best representation of the variance in the data, the model fit of various structural equation models will be compared. This section concludes with a discussion and comparison of the results.

5.2.1 Key mediator model routine behaviour

A chain of structural equation models are conducted to test the hypothesized mediation effect of commitment to the project on routine behaviour. Alternative mediation models are compared with the hypothesized model on the basis of their model fit. The fit indices of the models predicting routine behaviour are displayed in Table 5.2a. Model one is the Latent Regression model from the previous section. In models two to eight, all seven foci of commitment are included as key mediators without allowing for direct effects.

Hypothesis four is confirmed; commitment to the project is found to represent the variance in the data best with the model showing a better fit to the data than any of the other foci of commitment. When the mediation effect is added to the model, this restricts the model for direct effects, simplifying it. When the mediation effect is added to the model and the direct effects are taken from the model, this increases the free parameters of the model with six. The simpler model explains less of the variance in the data. The value of the chi squared test for model fit increases 12.12 away from a perfectly explained model. Testing this change in chi-square with the latent regression model allowing for all direct effects, this difference is found to be non-significant ($p = .06$). This indicates that the simpler model, including the mediation, explains the data equally well compared to the complex model, since the decrease in explanation is not significant. In this case the mediation model should be preferred.

Testing for additional direct effects from commitment on routine behaviour, it is found that adding a direct effect from commitment to the profession on routine behaviour significantly improves the model fit (model 9).

Table 5.2a Fit indices for structural mediation models Routine Behaviour

<i>Model</i>	χ^2 (DF)	DF	CFI	TLI	RMSEA	No of sig. Paths ¹	No of sig. Paths ²	Model comparison	$\Delta\chi^2$ (Δ DF)
1. Latent Regression model: all direct effects	1029.66	584	0.94	0.93	0.05				
2. Mediation model Project (Hypothesized model)	1041.79	590	0.93	0.93	0.05	1/1	2/6	1 vs 2	12.12 (6)
3. Mediation model Leader	1068.88	590	0.93	0.92	0.05	1/1	1/6		
4. Mediation model Career	1077.93	590	0.93	0.92	0.05	1/1	3/6		
5. Mediation model Job	1082.21	590	0.93	0.92	0.06	1/1	2/6		
6. Mediation model Organisation	1082.89	590	0.93	0.92	0.06	0/1	3/6		
7. Mediation model Profession	1064.41	590	0.93	0.92	0.05	1/1	2/6		
8. Mediation model Client	1085.88	590	0.93	0.92	0.06	0/1	0/6		
9. Mediation model Project allowing a path from commitment to the Prof. to routine behaviour	1033.05	589	0.94	0.93	0.05			2 vs. 7 1 vs. 9	8.73 (1)** 3.39 (5)
10. Mediation model Project allowing paths from prof. and career to routinebehaviour	1031.49	588	0.94	0.93	0.05			7 vs. 8	1.56 (1)

¹ Significant paths between the key-mediator and routine behaviour,

² Significant paths between the other foci of commitment and the mediator

** Chi-square test of change in model fit is significant at the 0.01 level (2-tailed)

* Chi-square test of change in model fit is significant at the 0.05 level (2-tailed)

Table 5.2a

Allowing for the effect of commitment to the career in addition to commitment to the profession does not significantly increase the model fit (model 10).

From the previous analysis model nine is found to be the best representative of the variance in the data and will be further analysed. Table 5.2b reports the standardized beta coefficient for the final mediation model allowing for a direct effect of commitment to the profession on routine behaviour. These results are illustrated in Figure 5.1. The interactions between the multiple foci of commitment become clear from this mediation model, providing more insight than the latent regression models in the previous chapter.

The model shows commitment to the lead project manager and commitment to the profession together influencing the levels of commitment to the project in predicting routine behaviour in the project. The concept of the matched level of analysis is confirmed for routine behaviour. Commitment to multiple foci has an effect on routine behaviour on the project only if these commitments influence commitment to the project.

However, the results also indicate that if commitment to the profession cannot be expressed through the project it still has a separate significant effect on routine behaviour on the project. Commitment to the career, the job, and the organisation together strengthen commitment to the profession in their effect on routine behaviour on the project. Commitment to the client seems to be a separate independent construct which does not relate to any of the foci of commitment in relation to routine behaviour.

Table 5.2b Key-Mediator model commitment to the project on Routine Behaviour

	Project	Routine behaviour
Affective commitment		
Project	n/a	.36**
Supervisor	.43**	
Organisation	0.11	
Profession	.26**	.19**
Client	0.05	
Job involvement	-0.09	
Career	.19*	
Adjusted R Square	.34**	.22**

*significant at the 0.05 level (2-tailed), **significant at the 0.01 level (2-tailed)

Table 4.2b

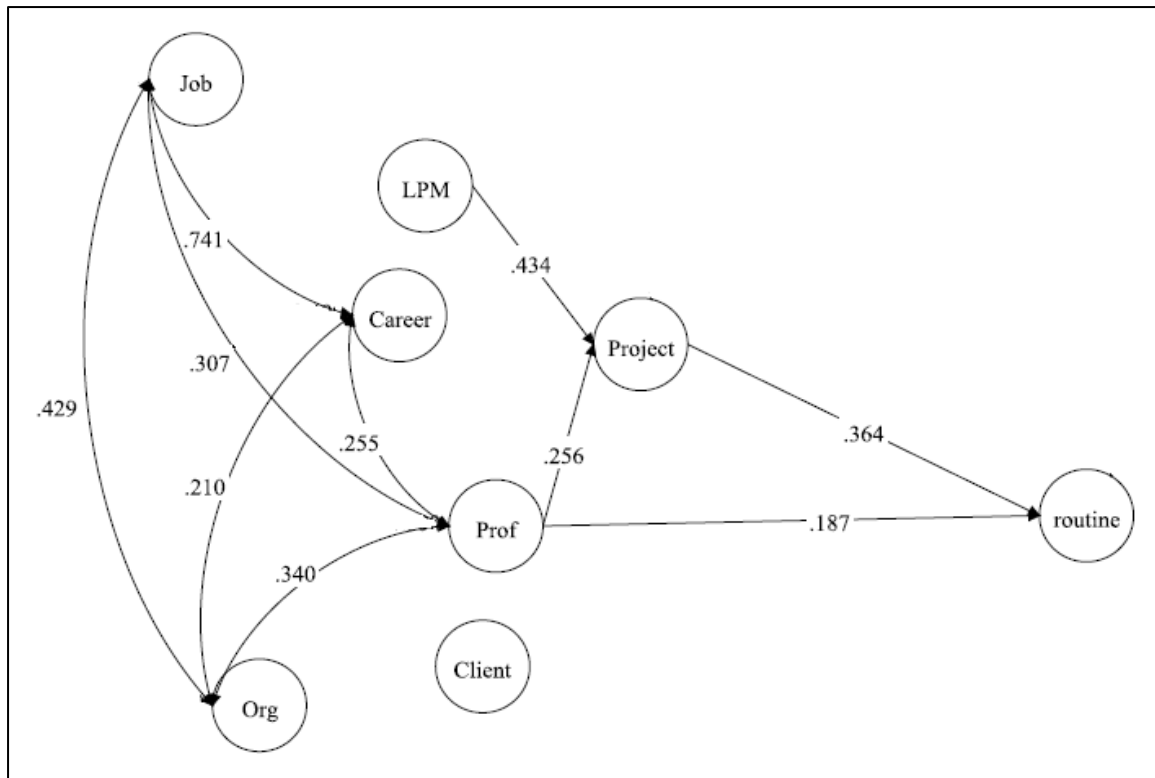


Figure 5.1 Significant regression effects in Key mediator model Routine Behaviour.

* Project = affective commitment to the project, Career = affective commitment to the career, Org = affective commitment to the organisation, Prof = affective commitment to the profession, Client = affective commitment to the client, LPM = Lead Project Manager, Job = job involvement, routine = routine behaviour

5.2.2 Key mediator model incremental CWB

To test hypothesis four the same type of analysis will be conducted including a chain of structural equation models and comparison of model fit. The fit indices of the models predicting incremental creative work behaviour are displayed in Table 5.2c. Model one is the Latent Regression model including the direct effects of the seven foci of commitment on incremental creative work behaviour in the four phases. In model two to eight, all seven foci of commitment are included as key mediators without allowing for direct effects.

Hypothesis four is confirmed with the model including commitment to the project as the key-mediator to be the best representation of the variance in the data. On the other hand, the mediation model is twenty-five parameters simpler than the model including all direct effects, and the fit of the model decreases by 48.49 (chi square value). This change is significant, indicating the mediation model is significantly decreasing the model fit. It should be concluded from this result that a mediation model is not a better representation of the data.

To make comparisons between the mediation models including the three types of creative work behaviour, direct effects are added to the model to increase the model fit. It is found commitment to the job has a direct effect on incremental creative work behaviour in the third phase (idea generation). This finding is in line with previous findings with commitment to the job having an effect on incremental work behaviour in the third phase. The third phase of incremental work behaviour has been found to be more radical than the other phases on the incremental creative process.

Next the mediation model including the direct effect of commitment to the job is compared to the latent regression model including all direct effects (model 1 versus model 9). Model 9 only marginally significantly decreases the fit in comparison with model 1. The chi square value changes by 41.12; the change in degrees of freedom is 24; the p value is .012.

The standardized regression coefficient of the mediation model of commitment to the project allowing for a direct effect of commitment to the job on incremental creative work behaviour in phase three is reported in Table 5.2d. Figure 5.2 illustrates the relations between the variables in the model. For interpretational reasons the correlational paths between the ICWB and routine, as well as between routine and commitment are omitted from Figure 5.2.

Table 5.2c Fit indices for structural mediation models Incremental CWB

<i>Model</i>	χ^2 (DF)	DF	CFI	TLI	RMSEA	No of sig. Paths ¹	No of sig. Paths ²	<i>Model comparison</i>	$\Delta\chi^2$ (Δ DF)
1. Latent Regression model: all direct effects	2191.89	1372	0.92	0.91	0.05				
2. Mediation model Project (Hypothesized model)	2240.37	1397	0.91	0.91	0.05	4/4	3/6	1 vs 2	48.49 (25)**
3. Mediation model Leader	2241.09	1397	0.91	0.91	0.05	2/4	3/6		
4. Mediation model Career	2257.25	1397	0.91	0.91	0.05	0/4	3/6		
5. Mediation model Job	2243.30	1397	0.91	0.91	0.05	2/4	2/6		
6. Mediation model Organisation	2251.58	1397	0.91	0.91	0.05	0/4	3/6		
7. Mediation model Profession	2474.94	1397	0.91	0.91	0.05	2/4	2/6		
8. Mediation model Client	2243.05	1397	0.91	0.91	0.05	0/4	0/6		
9. Mediation model Project allowing a path from Job on ICWB Phase 3	2235.00	1396	0.91	0.91	0.05			2 vs. 7 1 vs. 9	5.37 (1)* 43.12 (24)*
10. Mediation model Project allowing paths Job on ICWB Phase 3, Profession ICWB phase 1	2232.54	1396	0.92	0.91	0.05			7 vs. 8	2.47 (1)

¹ Significant paths between the key-mediator and incremental CWB, ² Significant paths between the other foci of commitment and the mediator

** Chi-square test of change in model fit is significant at the 0.01 level (2-tailed) * Significant at the 0.05 level (2-tailed)

Table 5.2c

Table 5.2d Key-Mediator model incremental CWB: Commitment to the Project

<i>Control</i>	<i>Group</i>	<i>Commitment Project</i>	<i>Incremental CPE</i>			
			<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>
Grade Organisation	Administrative		-.16**		-.23**	-.28**
Grade Organisation	Manager				-.12*	-.16**
Grade Organisation	Partner				.02	
Role Project	Financial Administrator		-.08	-.03		
Role Project	Project participant			-.12*		
Stage Project	75% or more completed		-.12*			
Industry	Consultants		-.11*			
Program type	SMART		.06			
	Routine Behaviour		.23**	.30**	.21**	.35**
	<i>Affective commitment</i>					
	Project	n/a	.25**	.26**	.16*	.14*
	Supervisor	.45**				
	Organisation	.10				
	Profession	.28**				
	Client	.02				
	Job involvement	-.08			.12*	
	Career	.19*				
	Adjusted R Square	.39**	.22**	.21**	.18**	.28**

*significant at the 0.05 level (2-tailed), **significant at the 0.01 level (2-tailed)

Table 5.2d

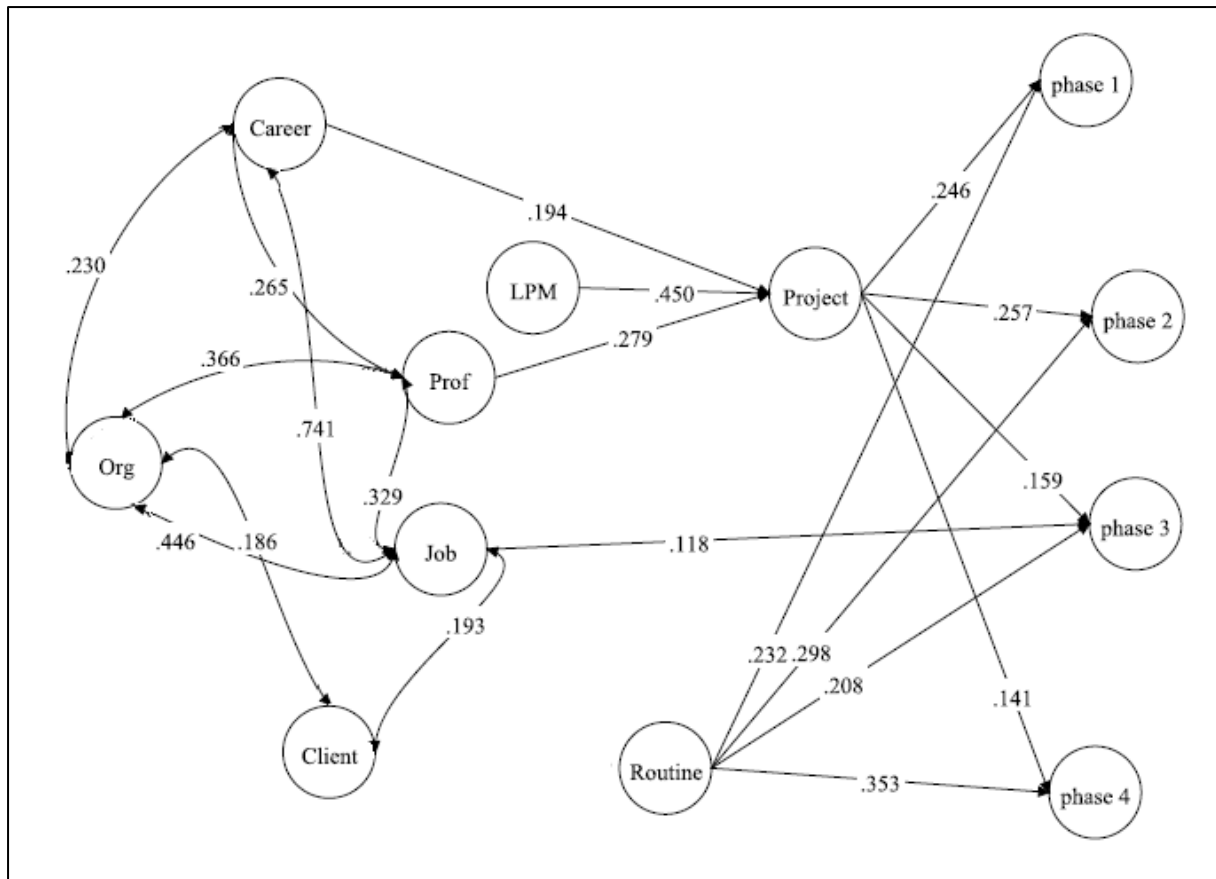


Figure 5.2 Significant regression effects in Key mediator model ICWB.

* Project = affective commitment to the project, Career = affective commitment to the career, Org = affective commitment to the organisation, Prof = affective commitment to the profession, Client = affective commitment to the client, LPM = Lead Project Manager, Job = job involvement, routine = routine behaviour, phase 1-4 = incremental creative work behaviour phases 1 to 4.

Commitment to the project is confirmed to be the best fitting mediator of commitment to multiple foci in their effect on incremental work behaviour. However, this mediation effect is not as strong as for routine behaviour. On the other hand, the mediation model provides insight into the interactions between the multiple foci of commitment in their effect on incremental work behaviour.

The career and the profession strengthen the effect of commitment to the project in affecting incremental creative work behaviour. The organisation influences commitment to the career and commitment to the profession. Although commitment to the organisation has no direct effect, this focus of commitment plays a central role in relations with four foci of commitment.

The effect of routine behaviour on incremental behaviour is significant and confirms previous findings by indicating routine behaviour and incremental creative work behaviour to be similar, with the weakest effect on incremental creative work behaviour in the third phase. Also the mediation model for routine behaviour is similar to the mediation model for incremental creative work behaviour. The main difference is the effect of commitment to the client, which is mediated by commitment to the job in influencing incremental creative behaviour in the third phase.

5.2.3 Key mediator model radical CWB

The fifth hypothesis is tested by the same type of analysis as the previous mediation models. The fit indices of the models predicting radical creative work behaviour are displayed in Table 5.2e. Model one is the Latent Regression model including the direct effects of the seven foci of commitment on radical creative work behaviour in the four phases. In model two to eight, all seven foci of commitment are included as key mediators without allowing for direct effects.

Hypothesis five is confirmed with the model including commitment to the job as the key-mediator to be the best representation of the variance in the data. The difference in chi square value is tested to be marginally significant, indicating the mediation model significantly decreases the model fit. However, when commitment to the project is allowed to have an effect on radical creative work behaviour in the first phase, the model fit increases. Comparing this model with model 1 (latent regression model including all direct effects), the change in chi square is 31.57 (24), with a p value of .14. The model does not significantly decrease the fit of the model and therefore the mediation effect is confirmed.

The standardized regression coefficients of the mediation model of commitment to the project allowing for a direct effect of commitment to the profession on radical creative work behaviour in phase one are reported in table 5.2f. Figure 5.3 illustrates the relations between the variables in the model. For interpretational reasons the correlational paths between the ICWB and routine, as well as between routine and commitment are omitted from Figure 5.3.

The mediation model confirms phases two and four of the radical creative work behaviour process to be less radical than phases one and three, because these phases are significantly influenced by routine behaviour. This explains why commitment to the job, which is associated with radical creative work behaviour, has no significant effect on radical creative work behaviour in the third phase.

The central role of commitment to the organisation is also confirmed in the mediation model of radical creative work behaviour, with commitment to the organisation to be related to four foci of commitment. On the other hand, it is commitment to the job that provides employees the largest incentive to show radical creative work behaviour, since there is no direct effect of commitment to the organisation on radical creative work behaviour.

Table 5.2e Fit indices for structural mediation models Radical CWB

<i>Model</i>	χ^2 (DF)	DF	CFI	TLI	RMSEA	No of sig. Paths ¹	No of sig. Paths ²	Model comparison	$\Delta\chi^2$ (Δ DF)
1. Latent Regression model: all direct effects	2275.19	1414	0.91	0.91	0.05				
2. Mediation model Job (Hypothesized model)	2314.94	1439	0.91	0.91	0.05	4/4	3/6	1 vs 2	39.76 (25)*
3. Mediation model Leader	2332.78	1439	0.91	0.91	0.05	0/4	1/6		
4. Mediation model Career	2329.20	1439	0.91	0.90	0.05	1/4	2/6		
5. Mediation model Project	2330.65	1439	0.91	0.90	0.05	1/4	2/6		
6. Mediation model Organisation	2324.60	1439	0.91	0.90	0.05	1/4	3/6		
7. Mediation model Profession	2328.34	1439	0.91	0.90	0.05	3/4	2/6		
8. Mediation model Client	2322.30	1439	0.91	0.90	0.05	2/4	0/6		
9. Mediation model Job allowing a path from Project on RCWB Phase 1	2306.76	1438	0.91	0.91	0.05			2 vs. 7 1 vs. 8	8.19 (1)** 31.57 (24)
10. Mediation model Job allowing paths from Project on P1 and profession on P4	2303.91	1437	0.91	0.91	0.05			7 vs. 8	2.85 (1)

¹ Significant paths between the key-mediator and radical CWB, ² Significant paths between the other foci of commitment and the mediator

** Chi-square change in model fit is significant at the 0.01 level (2-tailed) * Significant at the 0.05 level (2-tailed)

Table 5.2e

Table 5.2f Key-Mediator model RCWB: job involvement

<i>Control</i>	<i>Group</i>	<i>Job involvement</i>	<i>Radical CPE</i>			
			<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4</i>
Gender	Women		-.15**		-.13**	
Grade Organisation	Administrative					-.17**
Grade Organisation	Manager		-.15**	-.15*	-.17**	-.16**
Grade Organisation	Specialist				-.06	
Role Project	Financial Administrator		-.21**	-.18**	-.26**	-.22**
Role Project	Participant Project Manager		-.09	-.08	.06	-.09
Education	A level or GCSE			-.08		-.05
	Routine Behaviour		.08	.13*	.10	.30**
	<i>Affective commitment</i>					
	Project	-.03	.15**			
	Supervisor	-.03				
	Organisation	.28**				
	Occupation	.06				
	Client	.05				
	Job involvement	n/a	.21**	.05	.17*	.22**
	Career	.66**				
	Adjusted R Square	.63**	.22**	.09**	.18**	.29**

*significant at the 0.05 level (2-tailed), **significant at the 0.01 level (2-tailed)

Table 5.2f

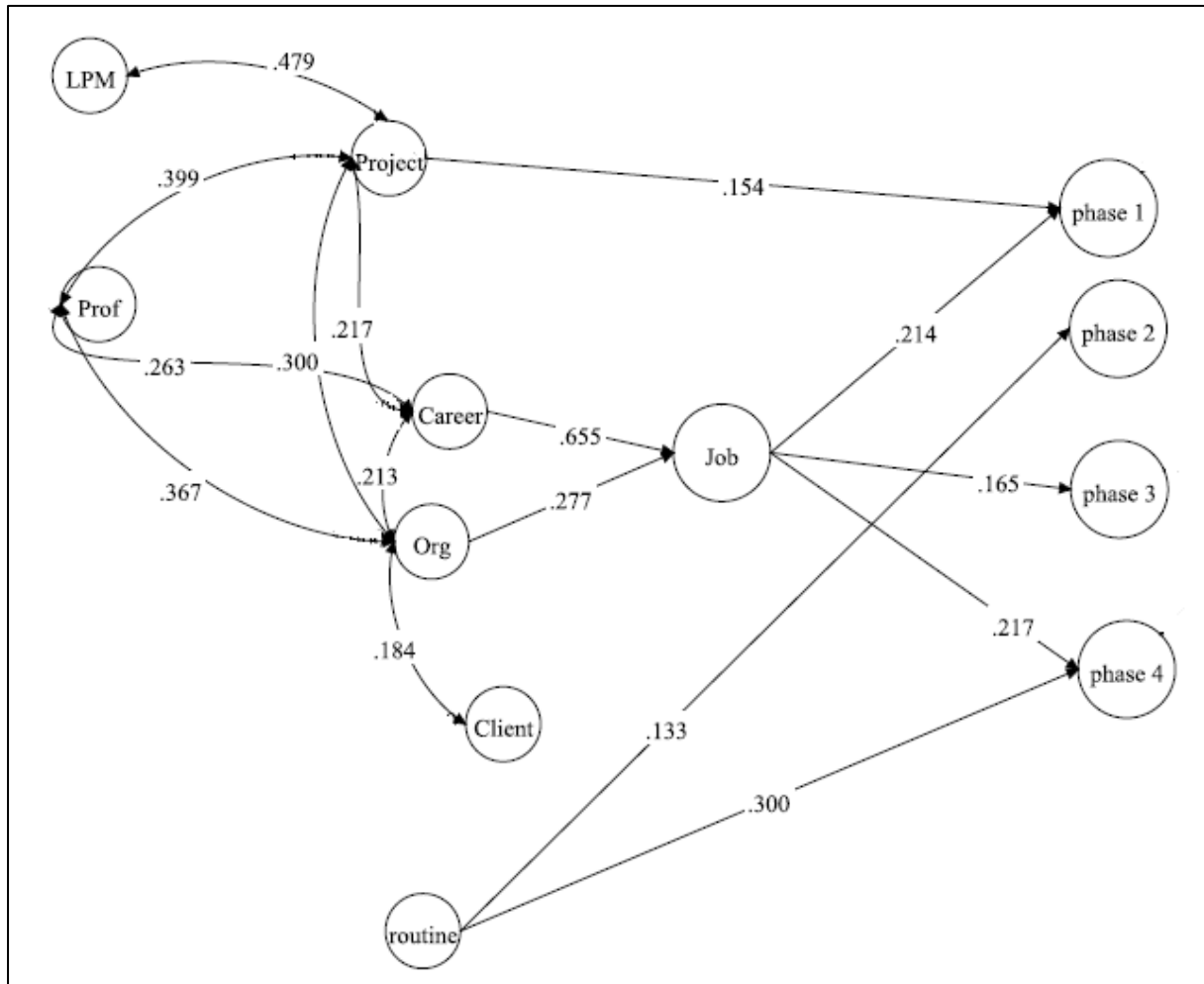


Figure 5.3 Significant regression effects in Key mediator model RCWB.

* Project = affective commitment to the project, Career = affective commitment to the career, Org = affective commitment to the organisation, Prof = affective commitment to the profession, Client = affective commitment to the client, LPM = Lead Project Manager, Job = job involvement, routine = routine behaviour, phase 1-4 = radical creative work behaviour phases 1 to 4.

The role of commitment to the client has a double indirect effect, influencing commitment to the organisation, which has an effect on commitment to the job influencing radical creative work behaviour. This is different for incremental creative work behaviour in the third phase, for which commitment to the client not only has an effect on commitment to the organisation but also has a direct effect on commitment to the job.

Discussion

An improvement of the mediation model in comparison to the direct effects model is the inclusion of interaction between the foci of commitment. This inclusion improves the overall explanatory power of the model for routine behaviour and incremental creative work behaviour. This finding indicates a strong interaction between the foci of commitment to be present in the context of inter-organisational innovation projects.

A limitation of the mediation model is that only one kind of interaction is included. Only mediation of one key focus of commitment is included, hypothesized on the basis of previous research. Other mediation effects could improve the estimation of the interactions between the foci of commitment. In addition, other kinds of interaction could also potentially improve the model. Moderation effects, mediated moderation effects, and moderated mediation effects could exist between the multiple foci of commitment. However, the current commitment literature has been unable to support models in this direction of more complex interactions between the multiple foci of commitment. Furthermore, hypothesizing and modelling all possible types of interaction would be a complex exercise with a large number of possible alternative models to be tested.

The findings from the variable-centred approach to analysis indicate a high level of correlation and interaction between the multiple foci of commitment in influencing the work behaviours. A more explorative approach into the interaction and coexistence of commitment may be seen as fitting to the multiple foci of commitment in this context as well as to the current state of the commitment literature. By exploring the data on combinations of levels of commitment, or the coexistence of levels of commitment in the IIP context, further insight will be provided into interactions between the multiple foci of commitment. The next chapter will follow a person-centred approach in the analysis of the data finding a number of underlying groups representing similar levels of commitment.

Chapter 6

Findings and Discussion: The Person-centred analysis

The previous chapter has presented the findings from the variable-centred analysis of the data, including the direct effects and mediation models. The fifth chapter includes the person-centred analysis, exploring how underlying profiles of commitment in the data are connected to creative work behaviour. The two chapters together provide a comprehensive examination of the relations between the multiple foci of commitment and creative work behaviour in inter-organisational innovation projects.

The objective of the person-centred analysis of the data is to (1) identify the distinct latent profiles of employees working in IIPs based on their levels of affective commitment to seven foci, (2) explore how the employees in these profiles can be characterized on the basis of demographics, and (3) to test if the levels of creative work behaviour are different for the members of these profiles. Latent Profile analysis will be used to explore the data on Latent Profiles (Muthén, 2004). Latent Mixture Modelling will be used to relate the profiles with the descriptive and creative work behaviour constructs.

In contrast to the variable-centred types of analysis, in the person-centred type of analysis the data is explored on underlying groups of respondents with similar patterns of responses. This is an explorative and rather inductive approach to analysis of data, different from the deductive approach applied in chapter five. The reason why hypotheses are not developed for this section is the (1) the nature of the person-centred approach, (2) the limited previous research on commitment profiles, and (3) the specific research setting of this study. This study is the first to focus on commitment in inter-organisational innovation projects, therefore, an explorative approach towards the study of commitment profiles is deemed appropriate. Next to the analysis in chapter five, the person-centred approach provides additional insight in the combination and coexistence of commitment, in which the variable-centred approach is limited.

6.1 Latent Profile Analysis

To determine the latent profiles on the basis of affective commitment to the seven foci, two types of models are compared on the basis of model fit. In Latent Profile analysis (Muthén, 2002) it is assumed that the correlations between the seven foci of commitment may be represented by a categorical latent variable, which represents qualitative and quantitative distinct latent profiles of employees in the population. Latent Profile assumes conditional independence, which means that besides the class membership the residual correlations between the observed variables should be zero (Vermunt and Magidson, 2002). In other words, the latent grouping explored by the technique is assumed to describe all variance in the data; all residual relations between variables are considered measurement error. This is a relatively strict assumption, especially given the high correlations between the multiple foci of commitment found in the previous section.

The alternative, factor mixture analysis (FMA, Lubke and Muthén, 2005), allows for correlations between the indicators in addition to the relations between the indicators and the categorical latent variable and to continuous latent variables (Lubke and Muthén, 2005). Since this study aims to identify the employee commitment profiles in the IIP context rather than to verify the invariance of the measurement model across the profiles, all FMA models were specified with a class-invariant factor model in which only the indicators' intercepts were allowed to vary across classes (Lubke and Muthén, 2005). Specifically, in the classification of multiple foci of commitment, allowing for conditional dependence among the indicators is in accordance with the theoretical expectations the multiple foci of commitment to have highly inter-correlations (Morin et al, 2010).

The person-centred types of analysis are explorative in nature; the chosen technique creates a grouping solution on the basis of a high number of random starting values. To reach an optimal solution one to twelve latent profiles (classes) were specified in both LPA and FMA models. The analysis reported are performed using the Mplus package version 7 (Muthén and Muthén, 2013), which uses the expectation-maximization algorithm of the robust maximum likelihood estimator (MLR) to estimate mixture model parameters (Muthén and Sedden, 1999). To avoid convergence of a model on a local solution, it is recommended to estimate the models with a series of random sets of start values (McLachlan and Peel, 2000). The settings for random starts of similar studies are adapted using 800 random start values with the 40 best retained for the final optimization (Morin et al., 2010; Morin and Marsh, in press). In addition, to ensure the study does not rely on a local maximum, final model is replicated with 2000 random sets of start values.

The choice for the optimal number of profiles representing the data is based on a number of indices, including log likelihood values (comparable to the dendrogram in a cluster analysis), the lowest value in the three information criteria (AIC, BIC, and ABIC), and a significance test for increase in explained variance between the number of profiles compared to the number of profiles minus one (Likelihood Ratio Test and Bootstrap LRT) (Li and Nyholt, 2001; Muthén, 2004; Lubke and Muthén 2005).

Entropy is a value indicating how well the class membership represents the data; entropy with values approaching 1 indicate clear delineation of classes (Celeux and Soromenho, 1996). The cut-off point of entropy values of .8 is used when the most likely class membership is used as a categorical variable in further analysis. The use of "most likely class membership" as a variable for further analysis becomes problematic because of high cross loadings when the entropy goes much lower than .8 (Muthén, 2004, Muthén and Muthén, 2013). In case values are below .8, it is recommended further analysis is conducted using factor mixture models, which represent the probability of class membership rather than final and fixed class membership.

The fit indices of the LPA and FMA models for one to twelve profiles are reported in Table 6.1. The FMA models overall show a better representation of the data, smaller log likelihood values, lower information criteria and higher entropy. This confirms the multiple foci of commitment to be correlated in addition to class membership.

In addition, the FMA model results are clearer and easier to interpret in the choice of the optimal class solution. The values for the log likelihood show a sudden increase at nine classes, the values per class are presented in Figure 6.1. Similarly, the AIC BIC and ABIC show their lowest values for the nine class solution. On the other hand, the entropies are below .8 after adding a seventh class. The Lo, Mendel, and Rubin Likelihood Ratio Test indicates that adding a third does class is not significantly explain more variance in the data.

The Bootstrap Likelihood Ratio Test (BLRT) is found to be significant for both seven and nine classes. In a recent simulation study it was found that the ABIC, BIC and BLRT are the more effective in choosing the number of classes to represent the underlying classes in LPA and FMA (Nylund et al, 2007). In addition, it is found that AIC, ABIC, LMR and BLRT tend to overestimate the number of classes and BIC tends to underestimate (Morin et al., 2011). The BIC values in the FMA model results show 'double dip' for the BIC value, reaching a minimum at four and at nine classes. Because of the underestimation of the number of classes of the BIC value, the first dip is interpreted as an underestimation.

From the indicators it is concluded that the data is most optimally represented by the nine class solution. The probability of misclassification in the nine class solution is tested by a canonical discriminant analysis, which derives a linear combination of the constructs that have the highest possible multiple correlation with the classes (Miller and Roth, 1994). Table 6.2 shows that overall 76.5% of the original grouped cases were correctly classified indicating differentiation between the profiles and acceptable levels of misspecification of the developed groups.

Table 6.1 Fit Indices From Alternative LPA and FMA Models

<i>Model LPA</i>	<i>LL</i>	<i># parameters</i>	<i>AIC</i>	<i>BIC</i>	<i>ABIC</i>	<i>Entropy</i>	<i>LMR (p)</i>	<i>LMR adjusted</i>	<i>BLRT (p)</i>
One class	-3544.12	14	7116	7174	7129	Na	Na	Na	Na
Two classes	-3406.96	22	6858	6948	6878	0.73	0.03	0.03	0.00
Three classes	-3344.74	30	6749	6873	6778	0.74	0.20	0.20	0.00
Four classes	-3292.15	38	6660	6816	6696	0.76	0.04	0.04	0.00
Five classes	-3260.41	46	6613	6802	6656	0.77	0.27	0.28	0.00
Six classes	-3232.73	54	6573	6795	6624	0.74	0.58	0.59	0.00
Seven classes	-3205.52	62	6535	6790	6593	0.73	0.18	0.18	0.00
Eight classes	-3185.38	70	6511	6798	6576	0.76	0.88	0.87	0.00
Nine classes	-3165.18	78	6486	6807	6559	0.78	0.72	0.72	0.00
Ten classes	-3145.93	86	6464	6817	6544	0.77	0.43	0.44	0.00
Eleven classes	-3128.98	94	6446	6832	6534	0.78	0.09	0.09	0.00
Twelve classes	-3098.25	102	6401	6820	6496	0.77	0.50	0.50	0.31
<i>Model FMA</i>	<i>LL</i>	<i># parameters</i>	<i>AIC</i>	<i>BIC</i>	<i>ABIC</i>	<i>Entropy</i>	<i>LMR (p)</i>	<i>LMR adjusted</i>	<i>BLRT (p)</i>
One class	-3357.12	21	6756	6843	6776	Na	Na	Na	Na
Two classes	-3268.78	29	6596	6715	6623	0.83	0.00	0.00	0.00
Three classes	-3215.19	37	6504	6656	6539	0.82	0.47	0.48	0.00
Four classes	-3189.31	45	6469	6653	6511	0.80	0.13	0.14	0.00
Five classes	-3166.86	53	6440	6657	6489	0.79	0.76	0.77	0.00
Six classes	-3151.29	61	6425	6675	6482	0.83	0.26	0.27	0.02
Seven classes	-3139.80	69	6418	6701	6482	0.78	0.06	0.06	0.00
Eight classes	-3115.73	77	6385	6702	6457	0.77	0.711	0.708	1.00
Nine classes	-3047.00	85	6264	6612	6344	0.71	0.149	0.153	0.00
Ten classes	-3048.13	93	6282	6664	6369	0.79	0.600	0.602	0.33
Eleven classes	-3027.83	101	6258	6673	6352	0.72	0.303	0.306	0.00
Twelve classes	-3032.06	109	6264	6612	6344	0.71	0.667	0.670	1.00

Note. ABIC = Adjusted BIC; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; BLRT = Bootstrap LRT; LL = Log Likelihood; LMR = Lo, Mendel, and Rubin LRT test; LRT = Likelihood Ratio Test.

Table 6.1

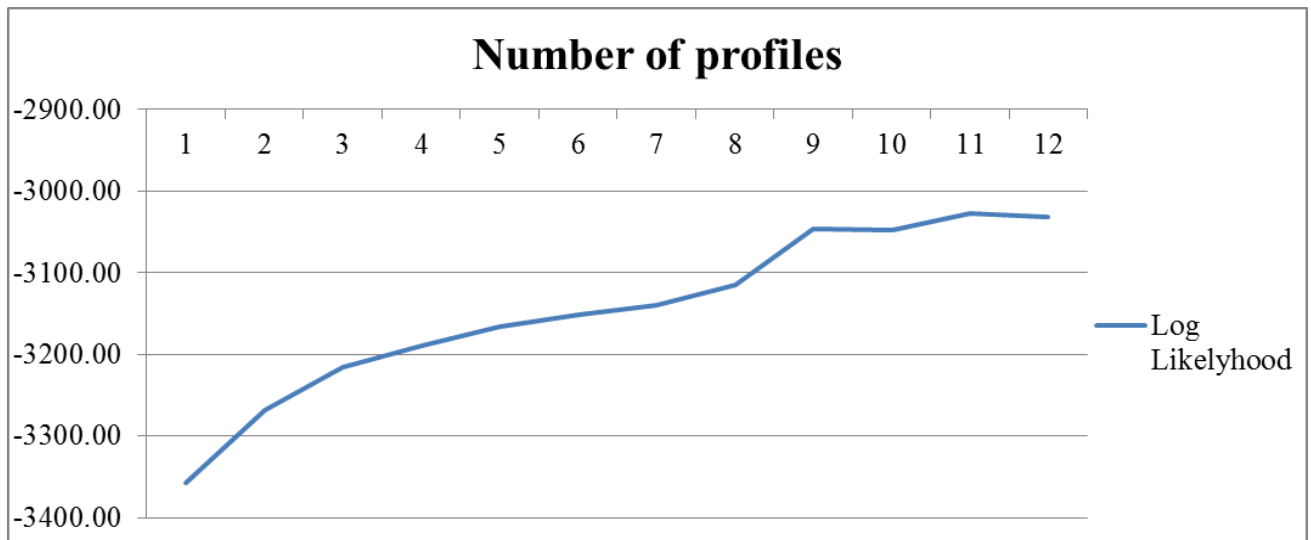


Figure 6.1. Log likelihood values per profile.

Table 6.2 Average Latent Class Probabilities (SD) for Most Likely Latent Profile Membership (Row) by Latent Profile (Column) for the nine class solution

<i>Profiles</i>	<i>No cases</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
1	6	.99	.00	.00	.00	.00	.00	.00	.00	.00
2	23	.013	.82	.00	.00	.01	.00	.01	.03	.01
3	20	.00	.00	.84	.00	.00	.08	.00	.00	.08
4	142	.01	.01	.04	.71	.02	.06	.06	.02	.07
5	12	.03	.08	.00	.04	.80	.00	.01	.00	.00
6	32	.00	.00	.01	.02	.00	.79	.00	.00	.21
7	41	.00	.00	.00	.02	.01	.00	.93	.00	.01
8	18	.04	.02	.02	.06	.04	.01	.05	.77	.01
9	156	.00	.01	.02	.07	.00	.22	.03	.00	.65

Table 6.2

The nine profiles represent groups of respondents differentiated by similar patterns in commitment to the seven foci. Table 6.3 shows the characteristics of the latent profiles on the mixture indicators of the seven foci of affective commitment. To help the interpretation the same results are illustrated in Figure 6.2.

Table 6.3 Commitment profiles, most likely membership and means

<i>Profile</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
<i>Affective commitment to</i>									
Job	3.44	4.15	4.11	4.24	3.61	4.67	4.35	3.11	5.03
Career	4.41	4.42	4.89	4.71	4.67	5.22	4.72	3.86	5.12
Project	4.83	3.12	6.17	6.11	3.75	6.51	5.80	4.82	6.54
LPM	5.23	3.63	6.09	5.82	5.00	5.76	5.98	5.11	6.22
Organisation	4.32	5.77	2.75	5.72	3.95	6.27	5.37	3.32	6.53
Profession	3.00	6.97	6.95	6.05	5.61	6.94	5.06	4.07	6.96
Client	3.49	5.02	4.29	4.48	2.16	2.29	4.26	3.64	5.00

Table 6.3

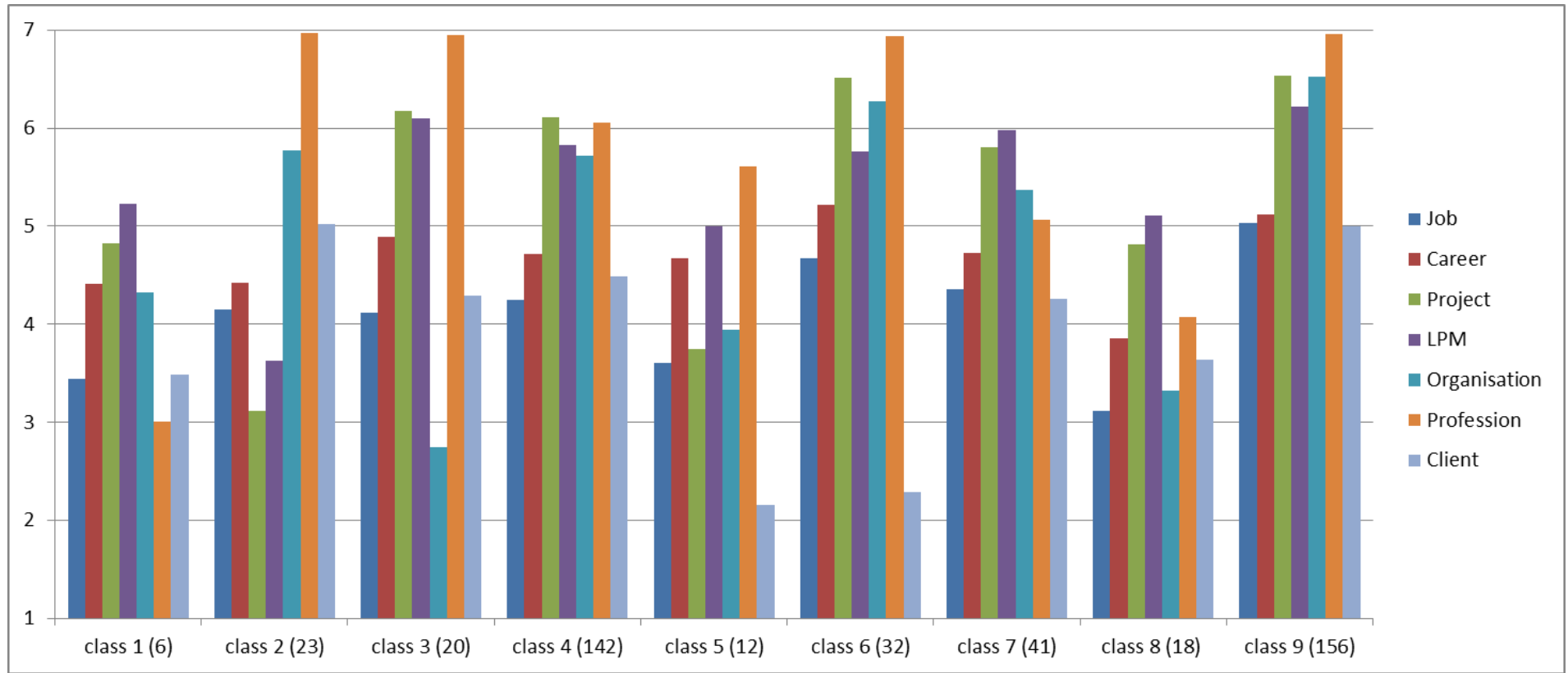


Figure 6.2. Characteristics of the latent profiles

Findings

The nine profiles represent nine groups of respondents on the basis of their levels of commitment to the multiple foci of commitment in the IIP context. The first profile represents a small group of six respondents (1.3% of the total sample) with the lowest overall levels of commitment. This '*Un-committed*' profile is characterized by its low levels of commitment to the profession in comparison to the other profiles (3.00 on average with an overall average of 6.27).

Profile two represents twenty-three respondents (5%) with particularly high commitment to the profession (6.97 average for profile two, 6.27 average overall), and the client (5.02 average for profile two, 4.18 average overall). High commitment to the profession is combined with the lowest levels of commitment to the project and the lead project manager (3.12 and 3.63). Commitment to the job, career and organisation are around the overall average. Most outstanding about this profile is the high degree of variation between the levels of commitment to the profession and the client (very high) and the levels of commitment to the project and lead project manager (very low). This pattern of commitment can be seen as the opposite of a synergistic pattern between the commitments to multiple foci. Because of the high commitment to the profession and the client this profile is given the label of '*Professionals*'.

Profile three represents twenty respondents (4%) with high levels of commitment overall except for an outstandingly low level of commitment to the organisation (2.75 for profile three, 5.57 overall average). This profile represents high levels of commitment, specifically to the profession and the lead project manager (6.95 and 6.09). Commitment to the job and the client are average. This '*Inter-organisational*' profile is characteristic because of its combination of high levels of commitment to all foci except for the organisation.

The fourth profile represents a significant large group of respondents (142, 32% of the total respondents). This group may be seen as the opposite of the 'professional' and 'organisationists', because commitment levels do not vary much between the foci. An overall medium-high level of commitment to all of the foci is characteristic of profile four. Commitment to the job and the career are very close to the average, commitment to the other foci reach medium-high levels. The respondents in this profile are able to combine their commitment to multiple foci, therefore they are given the label '*Synergists*'.

Profile five represents a small proportion of the respondents (12 respondents, 3% of the total sample). Overall levels of commitment are not particularly high. However, there is a

specific pattern of higher commitment to the career, the lead project manager and the profession. The members of this profile have the lowest levels of commitment to the client (2.16 for profile five, 4.18 overall average). Because of the relatively higher levels of commitment to the career and profession, this profile is given the label of *'Employability seekers'*.

Profile six includes thirty-two respondents representing 7.1% of the total sample. This group of respondents stands out in their very high levels of overall commitment, with specific high commitment to the profession (6.94), the job (4.67), and the project (6.51). More specific to this group is the overall outstandingly low commitment to the client (2.29 for profile 6, 4.18 on average). Because of the commitment to the proximal foci of commitment with high involvement in the job and strong connection with the profession rather than with the client, the members of this profile are given the label *'Absorbed'*.

The seventh profile represents a group of 41 respondents which is 9% of the total sample. This group of respondents shows medium high levels to many of the foci of commitment. Commitment to the lead project manager is medium high, whereas the commitment to the organisation, profession and client are around the average. Most outstanding is the lower commitment to the profession (4.26 for profile seven, 6.27 overall) in comparison to the commitment levels to the other foci. Because of the connection to a set of the foci in combination with low commitment to the profession, the respondents in this profile are given the label *'Connected'*.

Profile eight consists of eighteen respondents, describing 4% of the sample. This small but specific group of employees has low levels of commitment overall, except for medium levels of commitment to the project and lead project manager. Specifically, the commitment levels to the job and the career are the lowest in comparison to the other profiles (3.11 and 3.86 for profile eight, 4.41 and 4.85 overall average). Because of this specific pattern of higher commitment to the project and lead project manager this profile is given the label *'Project focused'*.

The ninth profile represents the largest group of respondents (156), 35% of the total sample. Similar to the *'Synergists'* profile, the respondents in this profile are able to combine high levels of commitment to all foci. In particular outstandingly high levels of commitment to the job, the project, the lead project manager and the profession. In comparison with profile four, the members of profile nine have higher levels of commitment to the organisation, the profession and the client. Because of this overall high commitment to all foci, the members of this profile are given the label *'Highly committed'*.

Discussion

The profiles found in the sample show a wide variety in size (1.3% to 35% of the total sample), with profiles four and nine together representing 66% of the total sample. This finding can be explained by the relative homogeneity of the sample, including a specific group of employees working in inter-organisational innovation projects. In homogeneous samples it is less likely to find meaningful underlying groups. However, the findings show subgroups to exist with distinctive commitment profiles, only the profiles represent small proportions of our sample.

The profiles representing small proportions in this sample are found to be more common in other work contexts. This becomes clear when the profiles found in this specific context are compared with the profiles found in previous studies. Table 6.4 shows an overview of the profiles expected to be found from previous studies (overview in chapter 2, section 2.3.3.1) compared to the findings presented in the current section.

Table 6.4 Field theory, previous studies and findings

<i>Profiles expected from previous studies</i>	<i>Profiles found in IIP context</i>
(1) 'Uncommitted' a low level of commitment to all of the foci	Profile 1: 'Un-committed'
(2) 'Organisationists' commitment to the organisation only	- Not found in the IIP context
(3) 'Locally committed' commitment to project, organisation & lead project manager	Profile 8: 'Project focused' Profile 7: 'Connected'
(4) 'Globally committed' commitment to the job, the career and the profession	Profile 3: 'Inter-organisationals' Profile 2: 'Professionals' Profile 6: 'Absorbed'
(5) 'Highly committed' or 'Synergists' high commitment to all foci	Profile 4: 'Synergists' Profile 9: 'High committed'
(6) 'Career committed' commitment to the career only	- Not found in the IIP context Profile 5: 'Employability seekers'

Table 6.4

What can be concluded from this comparison is that the specific context has influenced (1) the profiles that have been found, and (2) the profiles that are dominant in the sample. For example, previous research has found a profile consisting of employees with high levels of commitment to the organisation only, but with low level of commitment to the other foci.

This specific profile is found in the context of inter-organisational innovation projects. This is to be expected because the sample includes employees working in inter-organisational projects who are less likely to be committed to the organisation only.

On the other hand, the specific context of our study contributes to further exploration of profiles specific to the inter-organisational context. Three different types of globally committed employees are found, whereas in other (organisational) work settings these three profiles are represented by one 'global' profile. In the sample three distinct ways of commitment to foci outside the organisation are found (the *Inter-organisationals*, the *Professionals* and the *Absorbed*). In addition we found the *Synergists* and the *High committed* to be two distinct profiles in the sample.

Another contribution of this study of exploring profiles in the IIP context is the finding, or non-finding, of a profile with high commitment to the career only. Found in previous studies, in our sample of participants in IIPs no specific career-focussed profile was found. High career-focussed employees may have limited interest in work in inter-organisational innovation projects and, therefore, not part of the sample. The profile that comes closest to a career-focused profile are the '*Employability seekers*', with relatively higher levels of commitment to the career, the lead project manager and the profession. In the next section, the profiles will be further explored by examination of the particular characteristics.

6.2 Profile characteristics

The nine profiles found in the previous section have been related to their profile characteristic levels of commitment, which have been the basis of the profiling analysis. In this section the profiles are tested on their relationship with a number of demographics. This is relevant in providing more insight into the groups. It is also used to determine to what extent these profiles are based on these demographics or are rather a ‘real’ underlying grouping on the basis of levels of commitment. The variables representing demographical and specific characteristics of the projects and project participants are included in the Latent Profile analysis (i.e., Mplus’ auxiliary (e) analyses, Muthén and Muthén, 2013).

Some of the effects included in this analysis were found to have no relation with the profiles. The profiles are found not to be different on their level of education, gender, program types Feasibility and Fast-track, Roles in the project except for Lead Project Manager, and the number of respondents working in the engineering profession. Table 6.5 reports the demographics, the probability of belonging to the demographic group per profile and comparison of profiles. The differences in probabilities between the profiles are tested and the comparison is included if significant. For example, a lower proportion of the participants in profile 1 works in a project at the beginning stage (proportion is 0.00). This proportion is significantly lower than the proportion of this type of project in profile 4 (1vs4*).

Findings

The *Uncommitted* respondents and the *Connected* are found to work in projects with a relatively low average length (1.5 – 2 years). In addition, they do not tend to be a member of a professional body and they are mostly working in the science occupation group. The *Inter-organisational*s are more likely to be participants of projects in the early stages of those projects. Similar to the *Connected*, the *Inter-organisational*s are also relatively more likely to work in a science profession and less likely to work in the management occupation group.

The *Professionals* profile consists of a higher proportion of participants from collaborative R&D projects, which take relatively more time to complete (2.5 to 3 years on average). In this profile the respondents are more likely to be directors and less likely to be partners or project managers. There are no part-time respondents in this profile. The *Project focussed* are also found to be more likely to work on collaborative R&D projects which are on average longer projects (2.5 to 3 years). In comparison with the *Professional*, the *Project*

Table 6.5 Results from the Wald Chi-Square (W^2) Tests of Probability Equality of the Auxiliary Analyses

		Profile:									Significant differences:							
		1	2	3	4	5	6	7	8	9								
Demographic	Group																	
Stage project:	Did not start / very beginning	0.00	0.16	0.15	0.12	0.14	0.21	0.26	0.26	0.22	1vs4**	1vs6**	1vs7**	1vs9**				
	Finish	0.16	0.08	0.01	0.16	0.14	0.20	0.08	0.09	0.21	3vs4**	3vs6**	3vs9**					
Program type	Collaborative R&D	0.70	0.89	0.78	0.72	0.76	0.59	0.65	0.93	0.55	2vs6**	3vs7*	2vs9**	3vs9*	4vs8*			
											4vs9*	6vs8**	7vs8*	8vs9**				
Role Project	SMART	0.15	0.06	0.09	0.21	0.12	0.27	0.28	0.03	0.34	2vs7*	2vs6*	2vs9**	3vs9**	4vs8*	4vs9**	5vs9**	6vs8**
	Lead Project Manager	0.44	0.06	0.37	0.45	0.18	0.50	0.36	0.04	0.55	2vs3*	2vs4**	2vs6**	2vs7**	2vs9**	3vs8**	4vs8**	5vs6**
Grade											5vs9**	6vs8**	7vs8**	8vs9**				
	Partner	0.17	0.00	0.03	0.07	0.12	0.10	0.00	0.00	0.11	2vs4*	2vs9**	4vs7*	4vs8*	7vs9**	8vs9**		
	Director	0.17	0.52	0.00	0.30	0.02	0.40	0.31	0.00	0.52	1vs9*	2vs3*	2vs5*	2vs8**	3vs4**	3vs6**	3vs7**	3vs9**
											4vs5**	4vs8**	4vs9**	5vs6**	5vs7**	5vs9**	6vs8**	7vs8**
											8vs9**	7vs9**						
	Senior Manager	0.00	0.18	0.15	0.22	0.15	0.08	0.26	0.17	0.08	1vs7**	1vs9*	4vs6*	4vs9*	7vs9*			
	Specialist	0.00	0.19	0.17	0.11	0.13	0.13	0.08	0.17	0.07	1vs4**	1vs6*						
	Project Manager	0.17	0.00	0.17	0.10	0.00	0.03	0.06	0.06	0.03	4vs5*							
Occupation	Management	0.17	0.25	0.12	0.27	0.12	0.24	0.35	0.15	0.27	3vs7*							
	Consultant	0.00	0.18	0.03	0.13	0.01	0.09	0.05	0.17	0.11	1vs4**	1vs9**						
	Science	0.00	0.18	0.42	0.15	0.12	0.11	0.16	0.09	0.13	1vs3**	1vs4**	1vs7**	1vs9**	3vs4*	3vs6*	3vs8*	3vs9*
	Total length of Project	3.30	5.40	4.83	4.32	4.51	4.07	4.05	5.62	3.82	1vs8**	2vs6*	2vs7*	2vs9**	4vs8*	6vs8*	7vs8*	8vs9**
	Part-time	0.17	0.00	0.12	0.14	0.10	0.14	0.24	0.09	0.14	2vs4**	2vs6**	2vs7**	2vs9**				
	Member of Professional body	0.00	0.39	0.53	0.61	0.53	0.63	0.55	0.51	0.67	1vs all other profiles **							

*significant at the 0.05 level (2-tailed), **significant at the 0.01 level (2-tailed)

Table 6.5

focussed profile includes less respondents at high organisational grades such as partner and director.

The *Absorbed* are less likely to be participants of Collaborative R&D projects, and more likely to be working on SMART projects. Similarly, the *High committed* tend to work on SMART project and are less likely to work on Collaborative R&D projects. Consequently the *High committed* are more likely to work on relatively short projects (1.5 to 2 years on average). Specifically, the *High committed* are more likely to be directors and lead project managers and less likely to be project managers.

The *Synergists* have proportionally more senior managers in their profile, the *Employability seekers* include no project managers and the *Inter-organisational*s have no directors in their profile. The *Connected* have no partners and relatively more senior managers from a management occupation.

Discussion

The findings show some overall patterns of demographic characteristics per profile. However, the profiles are not completely explained by the demographics of respondents or the characteristics of the projects. This implies the underlying groups of employees, the profiles found in the previous section, are based on their levels of commitment, rather than project characteristics influencing their levels of commitment. Table 6.6 provides an overview of the findings from this section, showing the patterns between the profiles, the stage of the project, the project type and grade in the organisation.

What can be concluded from this analysis is that the more senior the respondents, with higher grades in their organisations, the more likely they are to be part of a profile with higher levels of commitment to more of the foci. The types of projects are related to the total length of the project, with collaborative R&D project being longer than SMART projects. The profiles with significantly more participants from SMART projects (the *High committed* and the *Absorbed*) tend to commit to more foci of commitment and show higher levels of commitment in general. The length of the project does not seem to have a significant impact on the levels of commitment with both the profile with the highest levels of commitment (*High committed*) and the lowest levels of commitment (*Un-committed*) to include project participants of projects of average 1.5 to 2 years.

Table 6.6 Overview of findings on relations between profiles, project characteristics and grade in organisation

<i>Profiles found in IIPs</i>	<i>Length / Phase project</i>	<i>Project Type</i>	<i>Grade in organisation</i>
Profile 1: 'Un-committed'	1.5 - 2 years		
Profile 8: 'Project focused'	2.5 - 3 years	C R&D	Less partners and directors
Profile 7: 'Connected'	1.5 - 2 years		No partners, many senior managers
Profile 3: 'Inter-organisationals'	early stages		No directors
Profile 2: 'Professionals'	2.5 - 3 years	C R&D	More directors
Profile 6: 'Absorbed'		SMART	
Profile 4: 'Synergists'			More senior managers
Profile 9: 'High committed'	1.5 to 2 years	SMART	More directors
			Lead project managers
Profile 5: 'Employability seekers'			No project managers

Table 6.6

6.3 Test of the relations between the profiles and CWB

In the final section of this chapter the profiles will be related to the two types of creative work behaviour and routine behaviour. In addition, a number of project context variables will be included in the analysis to provide more insight into the conditions of the projects the participants experienced. In contrast to the test of the demographic characteristics, the creative work behaviour and context variables are continuous variables. Therefore the means are tested on equality between the profiles, rather than the comparison of probabilities in the previous section. Results of the tests are reported in Table 6.7, including the means and test of mean differences between the profiles for routine behaviour, incremental and radical creative work behaviour, and in Table 6.7, including the means and test of mean differences between the profiles for the context variables.

The additional variables in this section provide more insight into the ways commitment profiles are related to creative work behaviour. These are tenure, psychological safety, intrinsic motivation, and creative climate (related to the project, the organisation, the lead project manager, the profession and the client). Tenure was measured for the organisation, the client, the profession, and the project, and was found to be only significantly different between the profiles for tenure at the organisation and the client. Psychological safety was measured by a seven-item survey measure adapted from Edmondson (1996). Intrinsic motivation was measured using Amabile's (1985) 3-item survey measure, and creative support was measured adapting the 4-item measure developed by Zhou and George (2001). Confirmatory factor analysis confirmed the reliability of the survey measures of psychological safety and intrinsic motivation ($\chi^2 = 124.39$ (31), CFI = .93, TLI = .90, and RMSEA = .08). Similarly, the reliability of creative support from the organisation, the project, the client, the profession and the lead project manager was confirmed by confirmatory factor analysis ($\chi^2 = 420.77$ (126), CFI = .92, TLI = .88, and RMSEA = .08)¹. The items of the measures and factor loadings are displayed in Appendix 3.8.

¹In the confirmatory factor analysis of creative support from the organisation, the project, the client, the profession and the lead project manager the similarly worded items were allowed to correlate.

Findings

The small group of respondents in profile one, the '*Uncommitted*', scored the lowest on incremental creative work behaviour, except for incremental CWB in the second phase (information search). This group is not the lowest on routine behaviour. However, the average of the profile 5.71 is below the overall average of 6.12. Also, on radical creative behaviour the members of this profile show the lowest levels. This confirms the second phase of the creative process to be less creative than the other phases. Some of the enabling conditions in the project in which these respondents have been participating that may contribute to the low levels of creative work behaviour are found to be the lowest levels of creative support from the lead project manager (3.24) and low levels of creative support from the profession (3.75).

The *Professionals* are found to have the lowest levels of routine behaviour and low levels of incremental creative work behaviour in phases one and two (4.51 and 4.95 for profile two, averages of 5.4 and 5.84). The levels of incremental creative work behaviour in phases three and four, as well as radical creative behaviour are average. The *professionals* show only high commitment to the profession, the organisation and the client. An explaining factor in regard to these findings is the low psychological safety experienced in the project and the low levels of creative support from the project and the lead project manager. The higher levels of radical creative work behaviour can be explained in relation to the high levels of creative support from the client in this profile. Commitment to the client in combination with a client stimulating and expecting creativity seems to off-set the low commitment to the 'uncreative' environment of the project.

The *Employability seekers* have slightly higher levels of creative work behaviour. However, these values are on average not significantly higher than the *Uncommitted* and the *Professionals*. The *Employability seekers* show only significantly higher levels of incremental creative work behaviour in the first phase, the identification of problems. Other interesting mean differences for this profile are their average low intrinsic motivation, relatively low psychological safety and low client tenure. The *Employability seekers* experience low creative support from the project and from the lead project manager, which is similar to the *Professionals*.

The *Project focussed* are a small profile, therefore mean differences are less likely to be significant. On the creative work behaviour measures this group is not significantly higher than the *Uncommitted*, the *Professionals*, or the *Employability seekers*. In particular, radical

Table 6.7 Results from the Wald Chi-Square (W^2) Tests of Mean Equality of the Auxiliary Analyses

	<i>Profile:</i>									<i>Significant differences:</i>								
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>									
Routine behaviour	5.71	5.50	6.29	6.09	5.60	6.37	5.93	5.65	6.32	2vs3*	2vs4*	2vs6**	2vs9**	3vs8*	4vs9*	5vs6*	5vs9*	6vs7*
										6vs8**	7vs9**	8vs9**						
ICWB phase 1	4.37	4.51	5.92	5.31	4.94	5.63	5.30	4.51	5.63	1vs3**	1vs4**	1vs5*	1vs6**	1vs7**	1vs9**	2vs3**	2vs4*	2vs6**
										2vs7*	2vs9**	3vs4*	3vs5**	3vs7*	3vs8**	4vs8**	4vs9*	5vs6**
										5vs9**	6vs8**	7vs8**	8vs9**					
ICWB phase 2	5.66	4.95	6.10	5.81	5.35	6.11	5.63	5.30	6.03	2vs3**	2vs4**	2vs6**	2vs7*	2vs9*	3vs5*	3vs8*	4vs6*	5vs6*
										6vs7*	6vs8*	7vs9*	8vs9*					
ICWB phase 3	4.13	4.94	5.63	5.20	4.50	5.37	5.00	4.56	5.44	1vs2*	1vs3**	1vs4**	1vs6**	1vs7**	1vs9**	2vs3*	3vs5**	3vs7*
										4vs5*	4vs8*	5vs6*	6vs8*	7vs9*	8vs9**			
ICWB phase 4	4.13	4.98	5.76	5.40	4.60	5.50	5.14	4.63	5.57	1vs2*	1vs3**	1vs4**	1vs6**	1vs7*	1vs9**	2vs3**	2vs9*	3vs5**
										3vs7*	3vs8**	4vs8**	5vs6*	5vs9**	6vs8**	7vs9*	8vs9**	
RCWB phase 1	3.87	4.32	5.33	5.08	4.10	5.19	4.85	4.37	5.20	1vs3*	1vs4**	1vs6*	1vs9*	2vs3*	2vs4*	2vs6*	2vs9*	3vs5**
										3vs8**	4vs5**	4vs8**	5vs6**	5vs7*	5vs9**	6vs8**	8vs9**	
RCWB phase 2	3.95	4.38	4.82	4.69	3.98	4.82	4.62	4.16	4.81	4vs5*	5vs6*	5vs9*						
RCWB phase 3	4.01	4.44	4.99	4.74	4.21	4.70	4.78	4.03	4.83	3vs8*	4vs8*	6vs8*	7vs8*	8vs9*				
RCWB phase 4	4.15	4.64	5.42	5.14	4.34	5.35	5.03	4.08	5.43	1vs3**	1vs4**	1vs6**	1vs7**	1vs9**	2vs4*	2vs6*	2vs9**	3vs5**
										3vs8**	4vs8**	4vs9*	5vs6*	5vs9*	6vs8**	7vs8**	7vs9*	7vs8**
										8vs9**								

Table 6.7

Table 6.8 Results from the Wald Chi-Square (W^2) Tests of Mean Equality of the Auxiliary Analyses

	<i>Profile:</i>									<i>Significant differences:</i>					
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>						
Intrinsic motivation	5.47	5.85	6.05	5.92	5.46	6.02	5.94	5.37	6.01	4vs8*	5vs6*	5vs9**	6vs8*	8vs9*	
Psychological safety	4.56	4.06	4.73	4.98	4.08	5.29	4.78	4.05	5.23	1vs6*	1vs9*	2vs3*	2vs4**	2vs6**	2vs7**
										2vs9**	3vs5*	3vs6*	3vs8**	3vs9*	4vs5**
										4vs6*	4vs8**	4vs9*	5vs6**	5vs7**	5vs9**
<i>Tenure</i>										6vs7**	6vs8**	7vs8**	7vs9**	8vs9**	
Organisation	3.72	7.66	8.42	8.41	6.94	8.44	8.94	8.66	8.81	1vs2*	1vs3**	1vs4**	1vs7**	1vs8*	1vs9**
										3vs4**	3vs6**	6vs8**	7vs8*	8vs9**	
Client	4.51	3.00	5.55	5.06	1.36	4.07	3.81	0.93	5.68	1vs5*	1vs8**	3vs5**	3vs8**	4vs5**	4vs8**
										5vs6**	5vs7*	5vs9**	6vs8**	7vs8**	8vs9**
<i>Creative support</i>															
Project	4.30	3.39	4.72	5.36	4.01	5.73	4.96	3.77	5.72	1vs4*	1vs6**	1vs9**	2vs3**	2vs4**	2vs6**
										2vs7**	2vs9**	3vs6*	3vs9*	4vs5**	4vs8**
										4vs9*	5vs6**	5vs7**	5vs9**	6vs7**	6vs8**
										7vs8**	7vs9**	8vs9**			
Lead Project Manager	3.24	3.35	4.48	4.87	3.75	5.17	5.31	3.71	5.40	1vs4**	1vs6**	1vs7**	1vs9**	2vs4**	2vs6**
										2vs7**	2vs9**	4vs5**	4vs8*	5vs6**	5vs7**
										5vs9**	6vs8**	7vs8**	8vs9**		
Organisation	4.04	5.87	3.60	5.53	4.84	5.96	5.06	3.95	6.06	1vs9**	1vs2**	1vs4**	1vs6**	2vs3**	2vs8**
										3vs4**	3vs5*	3vs6**	3vs7**	3vs9**	4vs8**
										4vs9**	5vs6**	5vs9**	6vs7**	6vs8**	7vs8*
										7vs9**	8vs9**				
Profession	3.75	4.82	5.29	5.15	4.41	5.42	4.76	3.92	5.45	1vs2*	1vs3**	1vs4**	1vs6**	1vs7*	1vs9**
										3vs8**	4vs8**	5vs6*	5vs9*	6vs7*	6vs8**
										7vs8**	7vs9**	8vs9**			
Client	3.75	5.59	5.19	4.64	4.00	4.11	4.33	3.67	5.25	1vs2*	1vs9**	2vs5*	2vs8*	3vs5*	3vs8**
										4vs5**	5vs9**	7vs9**	8vs9**		

Table 6.8

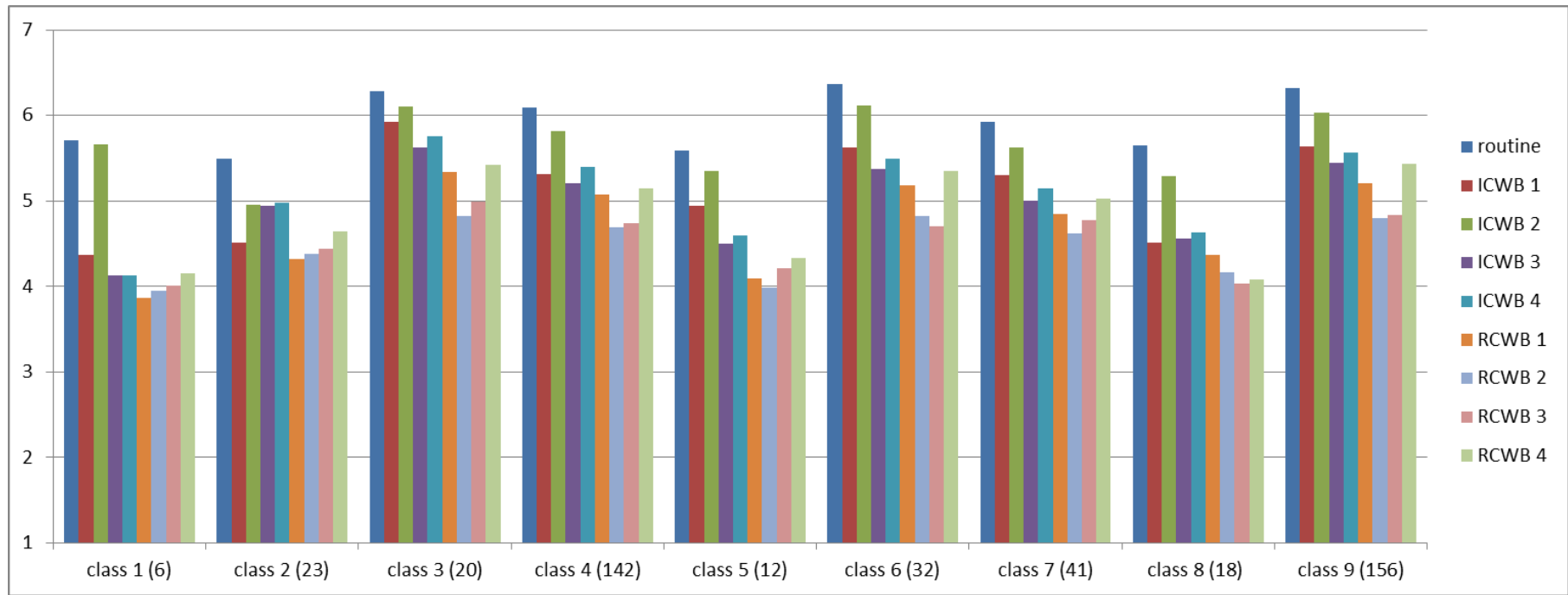


Figure 6.3. Levels of Creative Work Behaviour for the nine profile

creative work behaviour for this group is low, and radical creative work behaviour in the fourth phase is the lowest (4.08 for profile eight, 5.16 overall average). Similar to the *Employability seekers*, the respondents in this profile show low levels of intrinsic motivation, relatively low levels of psychological safety and low client tenure. Likewise, they experience low creative support from the lead project manager. In addition, the *Project focussed* also experience lower levels of creative support from the profession than the members of other profiles.

The *Connected* show medium levels of all the types of creative work behaviour. Four profiles score lower and four profiles score higher on the levels of creative work behaviour. Since there is a little more variety in the overall levels of incremental creative work behaviour, the *Connected* score significantly higher than the lowest scoring profiles and significantly lower than the highest scoring profiles. This is also the case for radical creative work behaviour in the fourth phase. The *Connected* have been at their employing organisation the longest compared to other profiles.

The *Synergists* represent a larger group of respondents; therefore, small differences in means can be significant. The *Synergists* score significantly higher on the creative work behaviour items than the low scoring profiles. On the other hand, the members of this profile also score lower than the three highest scoring profiles, specifically on incremental creative work behaviour. The *Synergists* indicate their projects to be highly psychologically safe environments and they receive high creative support from the project.

The *Inter-organisationals* show the highest levels of routine behaviour, incremental and radical creative work behaviour in all phases. This is equal for the *High committed* and the *Absorbed*. All three profiles score significantly high on all three types of behaviour with no significant differences between the three profiles. The relatively low commitment to the organisation of the *Inter-organisationals* do not limit the high levels of creative behaviour in this profile. Also, the low levels of commitment to the client do not limit the *Absorbed* to becoming less creative in their projects. These findings imply commitment to the organisation and commitment to the client not to be necessary for high levels of creative work behaviour, under the condition of high commitment to the other foci of commitment.

The three profiles with the highest levels of routine, incremental and radical creative work behaviour experience different project conditions. The *High committed* experience the highest levels of creative support from the organisation, the client, the profession, the organisation and the lead project manager. The *Inter-organisationals* only experience high creative support from the profession and low creative support from the organisation. The

Absorbed receive creative support from the project and the organisation. All three profiles have the highest levels of intrinsic motivation. The *Absorbed* and the *High committed* both have the highest levels of psychological safety, while the *Inter-organisationals* have only medium high levels of psychological safety. The *High committed* and the *Inter-organisationals* both have high client tenure. The *Absorbed* have a medium high level of client tenure.

Discussion

The findings show overall patterns of the profiles linked to the behaviour and the profile conditions, as can be seen from Table 6.9. The results summarized and linked together, provides insight into the processes in the projects connecting the commitments with the creative behaviours. Some of the commitment profiles that differ in levels of commitment show the same high levels of creative work behaviour (the *High committed*, the *Inter-organisationals* and the *Absorbed*). This indicates that commitment to the organisation and the client are not essential to reaching the highest levels of creative work behaviour.

Similarly, the *Employability seekers*, the *Uncommitted* and the *Professionals* show very different patterns of commitment, however, they all have similar levels of creative work behaviour. Higher levels of commitment to the profession, the client and the career are not found to have significant positive effects on creative work behaviours. This indicates a moderation or synergy effect, similar to the effect found by Vandenberghe and Bentein (2009), who found an interaction between affective commitment to the supervisor and affective commitment to organisation in their effect on intention to stay with the organisation. They found a moderation effect of commitment to the organisation, in such that the relation between commitment to the supervisor and intention to stay was stronger under the condition of low levels of organisational commitment (Vandenberghe and Bentein, 2009). In the results from the profiles a similar effect is found , in such that commitment to the profession, the client and the career alone are not positively affecting creative work behaviour. However, when these foci of commitment are combined with high levels of commitment to the job (the *Absorbed*), the job and the profession (the *Inter-organisationals*), the job, the profession, and the organisation (the *High committed*) behaviours are more positive.

Table 6.9 Results person-centred analysis: commitment profiles and Creative Work Behaviour

<i>Profiles</i>	<i>Behaviour</i>	<i>Profile conditions</i>
Profile 1: <i>'Un-committed'</i>	Lowest ICWB p1, 3, 4 Lowest RCWB p1, 2, 3	Low CS from LPM and profession
Profile 8: <i>'Project focused'</i>	Lowest on ICWB p1, RCWB p 3, 4	Low IM, low PS, low CS from LPM and Profession
Profile 7: <i>'Connected'</i>	Middle on routine ICWB, higher RCWB	High org tenure
Profile 3: <i>'Inter-organisationals'</i>	Highest on routine, incremental and radical	Low CS organisation, high CS profession and client
Profile 2: <i>'Professionals'</i>	Lowest routine behaviour, lowest ICWB p1, 2	High CS client, low CS LPM & project, low PS
Profile 6: <i>'Absorbed'</i>	Highest on routine, incremental and radical	High intrinsic motivation, high PS, high CS project and org.
Profile 4: <i>'Synergists'</i>	Medium high on all	High psy saf, high CS client
Profile 9: <i>'High committed'</i>	Highest on routine, incremental and radical	High IM, High Psy saf, high CS project, org, prof, client
Profile 5: <i>'Employability seekers'</i>	Middle low on routine and ICWB, low RCWB	Low IM, low psy saf, low CS project & LPM

*CS=creative support, PS is psychological safety, IM=intrinsic motivation, LPM = lead project manager

Table 6.9

Chapter 7

Conclusion and contribution

This chapter provides a summary of the main findings and contributions of this thesis. Table 7.1 provides an overview of the main contributions, and, in doing so, this table also provides an overview of the chapter. The chapter starts with the literature gap that this thesis addresses. The following section highlights the contribution of the research in the context of inter-organisational innovation projects. Subsequently, the methodological contribution in relation to the conceptualisation and measurement of creativity is outlined.

After this, the empirical findings are summarized, offering a total of three sets of empirical research providing insight into the relations between the multiple foci of commitment and creative work behaviour. The separate contribution of each approach towards the analysis is outlined. The theoretical contribution consists of (1) the integration of field theory and creativity research, (2) the empirical verification of field theory in the IIP context, and (3) the contribution to field theory providing insight into the diversity of fields affecting creativity. The chapter concludes with research implications, limitations and suggestions for future research.

Table 7.1 Overview of the contributions

<i>No.</i>	<i>Theme</i>	<i>Contribution</i>	<i>Section</i>
1	Research gap	This thesis is the first to conceptualise and empirically examine the effect of multiple foci of commitment on creativity	7,1
2	Context	Examining multiple foci of commitment and creative work behaviour in IIPs	7,2
3	Methods	The development and measurement of multiple foci of commitment in the context of IIPs	7,2
4	Methods	The conceptualisation, development and measurement of creative work behaviour in 4 phases	7,3
5	Methods	The conceptualisation, development and measurement of two types of creative work behaviour, incremental and radical	7,3
6	Empirical	Multiple foci of commitment and creative work behaviour: direct effects	7.4.1
7	Empirical	Multiple foci of commitment and creative work behaviour: key-mediation	7.4.2
8	Empirical	Multiple foci of commitment and creative work behaviour: profiles	7.4.3
9	Theory	Integration of field theory and creativity literature	7.5.1
10	Theory	Field theory: confirmation matched level of analysis of the project	7.5.2
11	Theory	Field theory: contribution of insight into the diversity of fields and synergy between field in relation to creative behaviour	7.5.3
12	Practice	Insight into the management of commitment and creativity in the context of IIPs	7.6

Table 7.1

7.1 Research gap

This thesis is the first study to propose and empirically examine the relations between commitment and creativity using a multiple foci approach. The concepts of commitment and creativity are embedded in two different fields of research and, therefore, have rarely been studied together. Bringing two fields of research together provides more insight into how employees interact with their work environment and how this relates to creative work behaviours, which are vital in innovative work settings.

More and more employees interact beyond the boundaries of the organisation in a networked employment environment. Consequently, management scholars have started to recognise the relevance and effects of multiple parties in the work environment towards which employees can develop commitment. Research focussing on the multiple foci of commitment has started to unpack the variety of interactions between foci of commitment, and how interaction between foci of commitment influences employee behaviour.

The research gap this thesis addresses is how employees' commitment to multiple foci impacts on types of creative work behaviour. Previous research has addressed the effect of multiple foci of commitment on employee behaviour. However, this is the first study to include a set of foci of commitment measuring its effect on routine, incremental and radical creative work behaviour. Findings show incremental and radical creative behaviour to be affected by commitment in a different manner than routine behaviour, which is explained on the basis of field theory and the interactions between a diversity of fields.

The relationship between commitment and creativity has received little attention in previous research. The current study is novel in aiming to develop and empirically assess the effects of commitment on engagement in the creative process using a multiple foci approach. In so doing, this thesis has responded to the need of assessing (1) the effect of multiple foci of commitment on other types of employee behaviour, (2) commitment to multiple foci in a truly inter-organisational context, and (3) creativity as a type of work behaviour as well as distinguishing between incremental and radical creative work behaviour.

7.2 Context of Inter-organisational Innovation Projects (IIPs)

This thesis is the first to examine multiple foci of commitment in what can be called a truly inter-organisational context. Commitment to foci external to the organisation have received scholarly interest (e.g., McElroy, Morrow, and Lacznik, 2001). However empirical studies on commitment to multiple groups or entities has taken place primarily within organisations. The research settings in which multiple foci of commitment have been examined include

predominantly public sector organisations, such as medical centres and nurses (Vandenberghe and Bentein, 2010; Herscovitch and Meyer, 2002, Cohen, 1995) and teachers (Cohen, 2006).

Other samples include university alumni working in a wide variety of organisations (Vandenberghe, Bentein and Stinglhamber, 2001; Stinglhamber, Bentein and Vandenberghe, 2002; Stinglhamber and Vandenberghe, 2003; Becker, Billings, Eveleth and Gilbert, 1996), sales organisations in the orthopedic implant industry (Siders, George and Dharwadkar, 2001) blue collar workers (Bentein, Stinglhamber and Vandenberghe, 2002), and employees in professional service firms (Swart and Kinnie, 2011).

The context of inter-organisational innovation projects is a specific context in which employees are closely interacting with parties beyond the boundaries of the organisation. This context is representative of work in highly networked employment settings, such as professional services firms, project work and R&D teams. Furthermore, the inter-organisational setting is representative of open innovation teams and innovation projects crossing the boundaries of the organisation.

Based on the foci that have been distinguished in the organisational context in previous studies, this study has explored commitment to a new combination of foci relevant to the work setting of inter-organisational innovation projects. The study is the first to distinguish a set of seven foci of commitment relevant to this context, including commitment to the project, the lead project managers, the organisation, the client, the profession, the career, and the job. The existing measures are tested and found together to be a reliable measure representing and distinguishing between the seven foci of commitment in the inter-organisational context.

Having assessed the multiple foci of commitment in the context of IIPs, the findings from this thesis offer researchers the opportunity to build a more nuanced and complete understanding of the multiple foci of commitment and their interactions in a context representative of the workplace of the 21st century. The findings of this study reveal commitment to all seven foci to be high; the commitments to be highly correlated, and interacting in their relation with the three types of work behaviour. In this way, the thesis provides insight into comparison of patterns of commitment found in traditional work setting versus the inter-organisation work settings found in inter-organisational innovation projects.

7.3 Conceptual clarity and measurement of Creative Work Behaviour

This study contributes to the creativity literature by developing and validating a self-report survey measure of creative work behaviour. This is a contribution to the measurement and conceptualisation of creativity because it focuses on (1) individual creative behaviour rather than general 'creativity', (2) the process of creativity including behaviour related to four phases of the creative process, and (3) distinguishing between radical and incremental types of creative work behaviour.

The way creativity is viewed and measured in this thesis is different to prior concepts of creativity. Creative work behaviour provides insight into the creative process and the role of the individual engagement in creative process related behaviours. Creativity as a type of behaviour opposes the current trend and tradition of measuring creativity. The dominant way of measuring creativity in the organisational context is by supervisor ratings of employee creativity. This tradition exists because (1) the conditions and characteristics of creativity have only been initially explored (new and original), (2) creativity studies have followed and developed this approach, and (3) to avoid common method bias.

In previous research, the authors Zhang and Bartol (2010a, 2010b) have tried to connect the measure of creative work behaviour with previous ways of measuring creativity by supervisor ratings. The purpose of this distinction is to differentiate between individual creative outcomes and individual creative enactment expressed in the creative process, in order to compare the two in their study. They have found support for a strong relation between creative process engagement and employee creativity ratings outcomes (correlation of .70 and a strong standardized regression effect of creative process engagement on supervisor ratings of β .55 in the final structural equation model including control variables).

In this study it was not attempted to follow the tradition of using supervisor ratings to measure creativity. Consequently, creative work behaviour has not been related to any ratings of creative output of any sort. This was chosen deliberately for the reason that this study focuses on the individual effort and input in the creative process. Measuring ratings of creativity by anyone else than the person making the creative effort would be, therefore, a misrepresentation of the phenomenon under study. In order to measure to what extent the individual engages in creative work behaviour in the most accurate way, it was chosen to develop and use a self-report survey instrument.

The reason for this is that ratings of creativity by anyone other than the person involved in the creative process would focus on (1) the end-product of creativity and not engagement in the process, and (2) a social construction of who is deemed to be creative and

not the individual creative effort. The end-product is not the same as the engagement and dedication towards the creative process. Creative work behaviours are expected to lead to more creative outcomes. However, this is dependent on many other factors influencing this process. There are a great number of enablers and hindrances in the process of implementing creative ideas, which all interfere in the relation between creative work behaviours and recognition of creativity by other parties.

Supervisor ratings of creativity are also biased because of social construction. When employees engage in creative work behaviour they are more likely to be recognised as creative by their supervisors. However, the recognition and ratings of creativity also includes a variety of elements not related to creative work behaviour, such as self-promotion and social construction. In other words, the one rated as most creative may not be the one who is most engaged in creative work behaviour.

The current study develops a self-report measure of creative work behaviour and thereby develops the definition, conceptualisation and elements of creative work behaviour. This study therefore contributes to the conceptualisation of creative work behaviour and has indicated what creative work behaviour is and what it is not (routine, in-role behaviour). By distinguishing between creative work behaviour and supervisor ratings of creativity as two distinct concepts, this thesis has provided conceptual clarity in the creativity literature. In addition, creative work behaviour in four phases distinguishes between different type and different phases. Therefore this measure has provided profound insight into the creative process, which would have been impossible using existing measures of creativity.

7.4 Empirical test

Recently indicated as a promising direction, this thesis is the first study in which the variable-centred and person-centred approaches to analysis are juxtaposed (Meyer, Stanley, and Vandenberg, 2012). Following the variable-centred approach, the direct effect and mediation effects between the multiple foci of commitment have been tested. Following the person-centred approach the data has been explored on commitment profiles, which are related to the three types of work behaviour. Taking another analytical approach, the person-centred approach is found to provide substantial additional insight, over and above the insight of the separate analyses. This is important, specifically since the variable-centred approach is limited in relation to multicollinearity. The juxtaposition of the two approaches provides insight into the effect of multiple foci of commitment on creative work behaviour. This is expressed as the research question of the thesis in chapter one.

7.4.1 Findings: Direct effects

The results show the latent regression effects of multiple foci of commitment to have particular effects on routine, incremental and radical creative behaviour. Confirming the hypotheses, commitment to the project and the lead project manager affect routine behaviour most strongly (.30*), with weaker but still significant effects on incremental CWB, and only significant affecting radical creative work behaviour in the first phase. The contribution to field theory of this study, extending the concept of target-action to three types of work behaviour, is confirmed by the data.

Results indicate incremental creative work behaviour to be predicted by the project, the organisation, the job and the career. Radical creative work behaviour is more strongly affected by commitment to the job and career. Only the first phase of radical creative work behaviour is found to be affected by commitment to the project and the third phase by commitment to the organisation. This confirmed the different targets of employee behaviour dependent on the type, incremental or radical creative work behaviour. General hypotheses were confirmed, however, due to multicollinearity, few results show unexpected directions.

Incremental creative work behaviour is also predicted significantly by routine behaviour, confirming routine behaviour on innovation projects to be incrementally creative in nature. Additionally, this is another confirmation that the project in this particular context plays the role of 'channel' of incremental creative behaviour, with employees successfully targeting this type of behaviour to the project. The direct effect analysis also confirms some phases in the process to be more connected to routine behaviour, which are also predicted by commitments connected to routine behaviour. For example, radical behaviour in the fourth phase is significantly affected by commitment to the profession, which also has a significant effect on routine behaviour. The first and third phase of the creative process are found to be more exploratory and radically creative; the fourth (evaluation) phase has been found to be more incremental. In general the multiple foci of commitment play a less important role in the prediction of creative behaviour in the fourth phase.

Overall commitment to multiple foci predicts most of the total variance of incremental CWB and radical CWB in the first and last phase. Commitment explains only a small proportion of the variance of radical CWB in the second phase ($R^2 = .11^{**}$). This confirms that affective commitment to multiple field provides a good basis for employees in regard to their work behaviour in inter-organisational innovation projects. However, this influence is stronger for some phases than others, and the influence varies per foci for the types of creative work behaviour.

This section of the thesis provides the first empirical test of the direct effects of multiple foci of commitment on creative work behaviour. Thereby this thesis contributes to the development of field theory in explaining the relations between commitment to multiple foci and creative work behaviour. Specifically, theoretical is developed and empirical support is found for the differentiation between the targets of work behaviour to be dependent on the nature of (creative) work behaviour. The affective commitment towards the entities towards which the particular behaviour is aimed have been found to most strongly affect the behaviour accordingly.

7.4.2 Findings: Mediation

Confirming the expectations based on field theory, and in line with previous commitment research (e.g., Bentein, Stinglhamber, and Vandenberghe, 2002), commitment to the project was found to be the key mediator in the effect between multiple foci of commitment on both routine and incremental CWB. This confirms the project to be the central focus of commitment, most strongly affecting the routine and incremental creative behaviour in the project. The mediation model ('simple model') is not a significantly worse representation of the variance in the data, and should therefore be preferred over the direct effect model.

For incremental creative work behaviour the mediation model is a worse representation of the variance in the data. This confirms the project to play the role of 'channel' of incremental work behaviour, with other parties involved in this type of behaviour. The contribution of the mediation model is the particular insight in the interaction between the commitments, not available from the direct effects Latent Regression Models.

For radical creative behaviour the best fitting mediation model is found to be the key-mediation model of commitment to the job. This confirms the developed theory with radical creative work behaviour to be aimed at challenging, changing and transforming the wider field, beyond the limited space of the project. The mediation model was found to represent the variance in the data equally as well as the full direct effects model, and is therefore preferred. This result can also be explained on the basis of commitment to the job, or job involvement to prompt different underlying motivation (intrinsic versus extrinsic) which then promotes more radical creative work behaviour. The findings confirm the overall idea of commitment and interaction with a wider field and a diversity of parties in relation to more radical creative work behaviour. The effects on commitment to the job in its mediating effect on radical creative work behaviour are significant for the career

7.4.3 Findings: Profiles

Following the person-centred approach to the study of multiple foci of commitment (Morin et al, 2011a, 2011b) the thesis contributes to the literature by exploring profiles of commitment representative of the inter-organisational work setting. Findings reveal nine profiles representing underlying populations which show similarities to previous research. The findings extend our knowledge of the types of commitment profiles crossing the organisational boundary. Three profiles are found to represent distinct ways of commitment to foci outside the organisation (the *Inter-organisationals*, the *Professionals* and the *Absorbed*). In addition, the *Synergists* and the *High committed* are found to be two distinct profiles in the context of inter-organisational innovation projects. The *Careerists* found in previous research have not been identified in our sample, the *Employability seekers* come closest to a career driven profile.

The commitment profiles have been related to creative work behaviour, and thereby the study contributes to the knowledge of the relations between commitment profiles and employee behaviour. The commitment profiles are related to routine, incremental, and radical types of creativity. The findings show not so much differences between incremental and radical creative behaviour, rather the profiles provide insight into the underlying processes which are important in the facilitation of all three types of employee behaviour. The *Inter-organisationals*, the *Absorbed* and the *High committed* are all found to show the highest levels of creative work behaviour. These findings confirm high commitment to a large set of fields, as well as synergy between the fields to be central to creativity.

An interesting finding is that the *Employability seekers* are found to be associated with particularly low levels of radical creative work behaviour. This is in contrast to previous findings of career commitment leading to more radical creative behaviour (Gilson et al, 2011). However, this highlights the contribution of this study by distinguishing between seven foci of commitment, rather than the two foci identified by Gilson et al. (2011), which provides a more nuanced insight into the relations. The “career” identified in Gilson et al (2011) may have been representative of professional commitment and job involvement, rather than careers specifically, which has been found in outstandingly high levels in the *High commitment*, *Absorbed*, and *Inter-organisational profiles*.

The profile analysis has shown to be a particular apt way of providing insight into the co-existence of commitments and is a source of insight which the variable-centred approach has been unable to provide. The profiles may provide the basis for future research on the interactions between the foci of commitment. From the latent profiles analysis more specific

expectations may be made about moderation and mediation effects between commitment to multiple foci.

7.5 Contribution to theory

This thesis has made a contribution to field theory by (1) developing a conceptual model combining elements of field theory and creativity literature, (2) extending and empirically confirming the concept of matched level of analysis, and (3) pinpointing that diversity and synergy between the various foci of commitment impact on creativity. This adds a dimension to field theory which did not exist.

Field theory has not been widely used in management research. However, in commitment literature it offers a perspective for understanding the multiple foci of commitment. This theoretical framework has been applied to the multiple foci of commitment, specifically to the idea of key-mediation and matched level of analysis. In the following three sections the contributions of this thesis to the theory are outlined.

7.5.1 Integration of field theory and creativity literature

In connecting the field of commitment and creativity, field theory offered a suitable rubric for the conceptual model developed in chapter two. Field theory, offers a lens for studying the multiple foci of commitment, by explicating the interaction and tension between the fields influencing employees in inter-organisational contexts. To integrate employee's creative work behaviour into this theoretic lens, it was necessary to borrow from creativity literature. This enabled distinct hypotheses for routine, incremental and radical creative work behaviour.

Creativity literature recognises the fields in which creativity takes place. For example, Csikszentmihalyi posits that the evaluation of a work product as both novel and appropriate arises from the interaction of a person, a field of gatekeepers, and a domain of symbolic knowledge (1988). Also Amabile's system model (1996) recognises the importance of the interaction with the wider field, and indicates knowledge of the professional field to be a requisite to becoming creative.

Having integrated these ideas specific to creativity in the conceptual model based on field theory, this thesis has contributed to the integration. Therefore, connecting different literature in this study, has enabled contributions to both creativity and commitment literature. Field theory has provided insight into the diversity of fields influencing creativity, extending the system views which are based on a single field. Creativity literature has a

deeper understanding of the relationship between multiple foci of commitment and behaviour, which supported the development of the conceptual model in recognizing the difference in the effects of multiple foci of commitment on different types of behaviour. In such that a variety of fields influence employee behaviour, with employees showing different types of behaviour related to different phases of the creative process.

7.5.2 Field theory: The matched level of analysis of the project

The context of the study, inter-organisational innovation projects, has also furnished a theoretical contribution. Field theory predictions are confirmed in that the fields influencing behaviour on innovation projects are most strongly predicted by commitment to the project. Both the direct effects as well as the mediation model are confirmed for routine and incremental creative behaviour. The expectation that commitment to the leader of the project would have a similar effect is not confirmed. However, this may be due to the strong correlation between commitment to the project and commitment to the lead project manager.

For radical creative work behaviour it is found that the model, including commitment to the job as the key-mediator, represents the variance in the data better than commitment to the project. This is different to predictions based on field theory, because the behaviour expressed in the field of the project (radical creative work behaviour in the project) is not found to be best predicted by commitment to the respective field. This finding can be explained on the basis that radical creative behaviour is aimed as a wider and overarching professional field, which is more strongly predicted by commitment to the wider field of the job.

7.5.3 Field theory: Diversity of fields

The greatest contribution to field theory is the diversity of fields interacting and competing in relation to behaviour in inter-organisational innovation projects. In intra-organisational contexts, commitments have been found to have the strongest effect on behaviours related to the most proximal field. Specific to the inter-organisational context of this study is the close alignment between the fields, which has the strongest impact on employee behaviour. In contrast to more traditional employment settings, here we find overlap, interaction, synergy and sharing between fields.

Synergy between several fields, rather than one or two particular fields, is the key to creativity in inter-organisational innovation projects. The more parties are experienced to be proximal to the employee, the higher the levels of creative work behaviour. Input, resources

and knowledge are shared with a wide variety of fields increasing the chance of a truly creative idea.

On the other hand, this study also made clear that some parties are more vital than others in the creative process. The job is central in motivating and providing access to resources, as well as the career. However, the *Employability seekers* are found to have high levels of incremental creative behaviour, therefore commitment to the job and the career are not enough in developing creative ideas. Commitment to the organisation and commitment to the client are not strictly necessary in becoming creative; under the condition of proximity to one of the two fields, optimal levels of creative work behaviour can be achieved. Intrinsic motivation is a factor that has been found to off-set the negative effect of low commitment to the client. Meanwhile high creative support from the client and commitment to the client can off-set low creative support and low commitment to the organisation.

7.6 Practical implications

This research has provided insight into the management of creativity in inter-organisational innovation projects. The added value of this thesis comes to the fore at multiple levels: ranging from contribution to the scientific management field to direct practical relevance with regard to management of government funded innovation projects. Insight from this thesis has implications for government policy, EU policy and human resource management practices.

This thesis has advanced our current understanding of the management of employee creativity in a context which is representative of many types of inter-organisational, collaborative and open innovation projects. More specifically, this thesis provides practical insight into the management of creativity in innovation projects, such as (1) organisational level management of inter-organisational and collaborative innovation projects, (2) the coordination and selection of national government funded innovation projects, and (3) the management of European Collaborative Innovation projects which are part of the Innovation Union.

In this thesis it is recognised that work settings are changing, and that managers are in need of insight into how these changes influence employee behaviour. From a practical perspective, the findings from this study would be useful for HR practitioners looking to enhance employee behaviour in inter-organisational collaborations. Inter-organisational collaboration has become more and more the norm rather than the exception, specifically in knowledge intensive and professional service organisations. Managers in these sectors could

be supported by insight into the diversity and interaction between fields, and how these together influence employee behaviour

Creativity, creative process and creative work behaviours are increasingly valued by all sorts of organisations, particularly during economically difficult times when all spending needs to be heavily scrutinized regarding its utility for business growth and sustainability. This thesis has provided insight into the work behaviour related to the creative process which may assist creating environments in which human resources can reach their optimal (creative) potential. This is vital with routine based skills, likely to be taken over by computers and machines. Only creativity is the “unique human characteristic”, the source of new ideas and the seed of innovation (Cropley, 1999; Runco and Pritzker, 1999).

7.7 Limitations and directions for future research

A series of limitations of the thesis have been addressed already in other chapter of the thesis, including the discussion of the disadvantages of a cross sectional design (section 3.1.2), the limitations caused by common method bias (section 3.3.4) and the effects of multicollinearity (section 4.1.3). In the following section particularly important limitations of the current study in relation to directions for future research are discussed. This is organised into the two sections related to the topics central to this thesis, (1) creative work behaviour, and (2) the multiple foci of commitment.

7.7.1 Opportunities for research on creative work behaviour

An opportunity for future research is the improvement of the measurement of creative work behaviour. In this study the measure has been developed into a complete measure of the phases of creativity, as well as the radical versus incremental elements of creative work behaviour. Following this development, other ways of measuring creative work behaviour could be developed. Interesting developments are taking place in relation to the measurement of employee attitudes and behaviour over time because of the IT development tools that make it possible to collect data more frequently and over a longer period of time. Repeated measurement of CWB over time could provide insight into the supportive and hindering conditions to showing this type of behaviour. This could provide insight into (1) under which circumstances particular phases of the creative process are more dominant, and (2) in which way and how often employees follow through the stages of the creative process.

Another direction in which the creative work behaviour measure could be developed is the rating of creative work behaviour by people other than the individual. This would bring

the measure back into the direction of creative behaviour ratings by supervisors. The scale developed in this study could be used by supervisors to rate employees' creative work behaviour rather than a general rating of 'creativity'. This limits the disadvantage of currently existing measures of creativity by supervisors, which measure to what extent employees are viewed to be creative rather than whether they show creative behaviour. This way of using the measure would limit the bias in relation to common method variance. However, there is still a discrepancy between a rating of behaviour by the supervisor and the individual's effort to engage in creative work behaviours. This bias is particularly relevant to creative behaviour because the majority of creative work behaviours take place in the mind of the employee. Processes such as problem finding, information search, idea generation and idea evaluation are mostly invisible to the environment of the employee. Supervisors may only indicate their impression of the process and may rate creative behaviour only on the basis of the ideas the employee expresses.

Future research could also examine the longitudinal measurement of creative work behaviour in relation to the phases of the creative process. The current study has assumed the creative process to be holistic in nature, with multiple cycles of the creative process taking place at any stage of the project. In the latent regression analysis the phase of the project has been included as a control variable. However, this does not represent the developments over time caused by the cross-sectional design.

7.7.2 Opportunities for research on the multiple foci of commitment

A limitation of the mediation models is the assumption of a key-mediator in relation to each type of creative work behaviour. A key-mediation model represents just one of the multitude of interactions possible between the multiple foci of commitment. Moderation, moderated-mediation and mediated-moderation are just a few other types of interaction. The person-centred analysis allows for another type of interaction. However, the test of interactions performed in this thesis are far from exhaustive.

The person-centred analysis has a limitations in relation to a conflict with the underlying assumptions of the approach. The exploration of meaningful subgroups in the sample assumes a heterogeneous sample representing a wide variety of employees with typical attitudes. This thesis includes a more homogeneous sample of employees working in a specific work context. This sample is limited by its number of respondents, which is low for a latent profile analysis. This limits the results by the finding of small profiles consisting of outliers rather than meaningful subgroups.

On the other hand, this person-centred analysis shows potential for future research because it addressed the limitations of the mediation model. Taking a variable-centred approach researchers are neither able to hypothesize nor to model complex interactions between multiple foci of commitment, whereas the latent profile analysis explores the typical coexistence of commitments for subgroups in the sample. Future research may focus on the analysis of larger samples including employees from a wide variety of work settings to explore general representative profiles of commitment.

A further limitation of the current research is the cross-sectional design of the study. A longitudinal design would be necessary to capture the process of developing commitment to fields, in relation to changes in creative behaviour. Dynamics in the project, climate, and changes over time are all interesting and important factors which cannot be controlled in this current study.

The use of the person-centred approach exploring commitment profiles is particularly interesting in relation to longitudinal data. Growth Mixture analyses of longitudinal data allow for the identification of the employees' profiles based on their longitudinal trajectories; and Latent Transitions Analyses, allows for the investigation of longitudinal relations between latent profiles of employees estimated at various time points. Insight into the changes in commitment profiles over time would provide insight into the most complex developments of commitment over time.

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Appendix

Appendix 3.1 Ethical statement communicated in the online survey

Dear Participant,

Thank you for taking the opportunity to share your experience in working in XXX.

This survey is specific for XXX projects, in case you are working for another type of Technology Strategy Board project, please fill in our general survey:

<http://go.bath.ac.uk/TSBInnovationSurvey2012>.

Your response will allow us to improve our understanding of the support and management of XXX projects and the services we provide to our partners.

This survey consists of the following sections:

SECTION A: Your work preferences

SECTION B: Your project

SECTION C: Your input in the project

SECTION D: Your Lead Project Manager

SECTION E: Your organisation

SECTION F: Your profession

SECTION G: Your client(s)

SECTION H: Your opinion on our services

Thank you for taking time to participate in this research. The research adheres to the guidelines as set by the British Psychological Society for conducting research with human participants.

Data collected in this study will remain anonymous and not be shared outside of the context of this PhD research. It is kept confidentially within the confines of this survey tool. The researchers may also hold a copy. As such, it is deemed that there is no increased risk to the participant outside of the normal data retention policies typically held. All data are collected and stored in accordance with the Data Protection Act (1998).

There are no explicit individual benefits for participating in this survey. Possible benefits may arise to the individual as a result of the salience of the topic investigated.

At all times throughout this study, including after survey completion, your right to withdraw from the study will be respected should you wish to do so. All data relevant to you will be removed from analyses without consequence or judgment.

Please tick the option below if you agree to the above, are happy with the survey aims, and are aged 18 years or older. You are under no obligation to continue should you not wish to.

We appreciate you help,

The Technology Strategy Board Grants team

For help and questions about participation in the web survey, please contact University of Bath, School of Management:

Yvonne van Rossenberg E-mail: y.g.t.van.rossenberg@bath.ac.uk

Appendix 3.2 Details of the ten interviewees

<i>Respondent</i>	<i>Name</i>	<i>Function</i>	<i>Date</i>
A	Louise Hopper	HR manager	13/07/2011
B	Matt Hardisty	Joint Head Strategy	24/08/2011
C	Matt Clark	Partner (Mr. Money)	24/08/2011
D	Stef Calcrafft	Partner (Strategy)	24/08/2011
E	Alex West	Head of Expreience Design & Partnership	08/09/2011
F	Stephen Butler	Partner (Creative)	08/09/2011
G	Sara Tate	Managing Director at Head office London Head of Brand & New Business	08/09/2011
H	Andy Medd	Partner (Strategy)	12/09/2011
I	Mark Waites	Partner (Creative)	12/09/2011
J	Laurence Barber	Head of TV Production	12/09/2011

Appendix 3.3 Original measure of Creative Process Engagement

Zhang and Bartol (2010a, 2010b)

Phase 1: Problem finding

1. I spent considerable time trying to understand the nature of the problems I faced
2. I thought about the problem from multiple perspectives
3. I decomposed a difficult problem / assignment into parts to obtain greater understanding

Phase 2: Information gathering

4. I consulted a wide variety of information
5. I searched for information from multiple sources (e.g., personal memories, other's experience, documentation, Internet ect.)
6. I retained large amounts of detailed information in my area of expertise for future use
.74
7. I considered diverse sources of information in generating new ideas

Phase 3: Idea generation

8. I looked for connections with solutions used in seeming diverse areas
9. I tried to devise potential solutions that move away from established ways of doing things
10. I spend considerable time sifting through information when generating new ideas
11. I generated a significant number of alternatives to the same problem before I chose the final solution

Appendix 3.4 List of items used in the pilot study and factor loadings

Incremental Creative Work Behaviour

Fit: $\chi^2 = 130.58$ (71), CFI = .86, TLI = .83, and RMSEA = .12

Phase 1: Problem finding

1. I spent considerable time trying to understand the nature of the problems I faced .71
2. I thought about the problem from multiple perspectives .65
3. I decomposed a difficult problem / assignment into parts to obtain greater understanding .87

Phase 2: Information gathering

4. I consulted a wide variety of information .61
5. I searched for information from multiple sources (e.g., personal memories, other's experience, documentation, Internet ect.) .77
6. I retained large amounts of detailed information in my area of expertise for future use .74
7. I considered diverse sources of information in generating new ideas .88

Phase 3: Idea generation

8. I looked for connections with solutions used in seeming diverse areas .87
9. I tried to devise potential solutions that move away from established ways of doing things .75
10. I spend considerable time sifting through information when generating new ideas .70

Phase 4: Idea evaluation

11. I promoted and championed my ideas to others .59
12. I generated a significant number of alternatives to the same problem before I chose the final solution .77
13. I went go over an idea, over and over, until I was sure it was the best idea I would come up with .84
14. I made sure only the best work would leave my hands .49

Radical Creative Work Behaviour

Fit: $\chi^2 = 115.140$ (71), CFI = .93, TLI = .91, and RMSEA = .10

Phase 1: Problem finding

1. I provoked people to understand the different sides of the nature of the problems we face .83
2. I thought about the problem from radically different perspectives .88
3. I came up with unconventional ways to deal with difficult problems to obtain greater understanding .78

Phase 2: Information gathering

4. I consulted information that has seemingly nothing to do with the situation .67
5. I searched for information from sources others would not recognise as a source .85
6. I retained information which seems to challenge the expertise in my field .77

Phase 3: Idea generation

7. I considered unexpected sources of information in generating new ideas .85
8. I looked for connections with solutions used in seeming controversial areas .87
9. I suggested radically new ways for doing work in the project .80
10. I spend considerable time provoking people to come up with radical new ideas .84

Phase 4: Idea evaluation

11. I did go all the way to promote some of my controversial ideas to others .89
12. I generated a significant number of unique and sometimes contradicting alternatives to the same problem before I chose the final solution .81
13. I was not afraid to take risks by doing work over in case I believed I could create something more exciting .67
14. I challenged people to think over to develop their most original ideas .82

Appendix 3.5 List of items of CWB used in final study with final factor loadings

Incremental Creative Process Engagement

Phase 1: Problem finding

1. I spend considerable time trying to understand the nature of the problems I face .71
2. I think about the problem from multiple perspectives .88
3. I decompose a difficult problem / assignment into parts to obtain greater understanding .64

Phase 2: Information gathering

4. I consult a wide variety of information .84
5. I search for information from multiple sources (e.g., personal memories, other's experience, documentation, Internet) .90
6. I retain large amounts of detailed information in my area of expertise for future use .55

Phase 3: Idea generation

7. I consider diverse sources of information in generating new ideas .83
8. I look for connections with solutions used in seeming diverse areas .84
9. I try to devise potential solutions that move away from established ways of doing things .75
10. I spend considerable time shifting through information that helps to generate new ideas .66

Phase 4: Idea evaluation

11. I generate a significant number of alternatives to the same problem before I choose the final solution .59
12. I will go over an idea repeatedly, until I am sure it is the best idea we will come up with (excluded item)
13. I make sure only the best ideas are taken forward .68
14. I will think of new ideas if I feel the idea is not good enough .82
15. I assess the new idea on its added value .85

Radical Creative Process Engagement

Phase 1: Problem finding

1. I provoke people to understand the different side of the nature of the problems we face .64
2. I think about the problem from radically different perspectives .85
3. I come up with unconventional ways to deal with difficult problems .81

Phase 2: Information gathering

4. I consult information that has seemingly nothing to do with the situation .73
5. I look for information which challenges the expertise in my field .81
6. I search for information from sources others would not recognise as a source .79

Phase 3: Idea generation

7. I suggest radically new ways for doing work in the project .81
8. I look for connections with solutions used in seeming controversial areas .83
9. I consider unexpected sources of information in generating new ideas .84
10. I spend considerable time provoking people's ideas to generate new ideas 73

Phase 4: Idea evaluation

11. I evaluate ideas on whether these are essential, extensive, and far-reaching .62
12. I generate a large number of (sometimes contradicting) alternatives to the same problem before I choose the final solution .69
13. I am not afraid to take risks by doing work over if I believe we can create something more striking .75
14. I challenge myself to develop my most original ideas .76

Routine behaviour: in-role behaviour (Van Dyne & LePine, 1998)

1. This particular co-worker fulfils the responsibilities specified in his/her job description .83
2. This particular co-worker performs the tasks that are expected as part of the job .89
3. This particular co-worker meets performance expectations .94
4. This particular co-worker adequately completes responsibilities .94

Appendix 3.6 List of items of Commitment used in final study with final factor loadings

Job involvement

1. The most important things that happen in my life involve my job .69
2. My job is a small part of myself (R) .30
3. I am very personally involved in my job .56
4. I live, eat, and breathe my job .78
5. Most of my interests are centred around my job .82
6. I have very strong ties to my job .69
7. Most of my life goals are job-oriented .83
8. I consider my job as central to my existence .76
9. I like to be absorbed in my job .46

Career orientation

1. My career is one of the most important things in my life .80
2. I regularly consider what I could do to get ahead at work .75
3. The ambitions in my life mainly have to do with my career .85
4. My career plays a central role in my life .86
5. I think that I should have a successful career .68
6. I am prepared to do additional chores, when these benefit my career .64

Affective commitment to the project

1. I do not regret having entered the innovation project .76
2. I like working in the innovation project .94
3. I am enthusiastic about the innovation project .93

Affective commitment to the profession

1. I do not regret having entered my profession .68
2. I like working in my profession .97
3. I am enthusiastic about my profession .91

Affective commitment to the organisation

1. I feel like part of the family within my organisation .88
2. My organisation has a great deal of personal meaning for me .93

3. I feel a strong sense of belonging to my organisation .97

Affective commitment to the client organisation

1. I feel like part of the family with this client .91
2. This client has a great deal of personal meaning for me .96
3. I feel a strong sense of belonging to this client .92

Affective commitment to the supervisor of the project

1. I have respect for my project supervisor .99
2. I appreciate my project supervisor .93
3. I have little admiration for my project supervisor (R) .48

Appendix 3.7 Measure of Corporate Social Responsibility used as marker variable

by Vitell and Davies (1990)

1. In my opinion, the management of an organization is only responsible for striving to maximize the return to shareholders on their investment
2. I feel, the fact that organisations have great economic power in our society means that they have a social responsibility beyond the interests of their shareholders.
3. As long as organisations generate acceptable shareholder returns, I feel managers have a social responsibility beyond the interest of shareholders.
4. In my opinion, the socially responsible manager must occasionally place the interest of society over the interest of the organisation

Appendix 3.8 Additional measures included in the Latent Mixture Analysis

Psychological Safety (Edmondson 1996)

1. Member of this project are able to bring up problems and tough issues.
2. It is safe to take a risk on this project
3. No one on this project would deliberately act in a way that undermines my efforts.
4. Working with members of this project, my unique skills and talents are valued and utilized.
5. It is difficult to ask other members of this project for help
6. If you make a mistake on this project, it is often held against you
7. People on this team sometimes reject other for being different

Creative Support (Zhou, J., & George 2001)

Items are re-worded for the organisation, the project, the profession, the client and the lead project manager.

- 1.) Creativity is encouraged at the organisation I work for.
- 2.) Our ability to function creativity is respected by the organisation I work for.
- 3.) The reward system of the organisation encourages innovation
- 4.) My organisation publicly recognises those who are innovative

Intrinsic motivation for creativity (Amabile, 1985)

1. I enjoy finding solutions to complex problems.
2. I enjoy creating new procedures for work tasks.
3. I enjoy improving existing processes or products.